



PhD Guidelines
Human-Centred AI Lab Sarajevo

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Introduction

This document is the result of ongoing discussions within the Human-Centred AI (HCAI) Lab, as well as the identification of key information gaps observed during regular meetings. It is intended solely as a **guidance resource for PhD students**, aiming to provide clarity, support decision-making, and address common questions that arise throughout the doctoral journey.

The content reflects collective experience and shared practices within the lab and should be used in conjunction with official university regulations and supervisor guidance.

Acknowledgment. The development of this document greatly benefited from proactive discussions and contributions from lab members. Special thanks are extended to Amina, Vahdin, Mubina, Amar, Ajla, Esma, and many others who actively contributed insights and feedback.

1 Why Pursue a PhD

A Doctor of Philosophy (PhD) represents the highest academic qualification and is fundamentally oriented towards the development of **independent research capability**. Pursuing a PhD is not only a continuation of formal education, but a transition into becoming a **creator of new knowledge**.

The primary motivation for undertaking a PhD is the opportunity to contribute to the advancement of science. PhD students engage deeply with a specific research problem, developing **expert-level knowledge** and producing original contributions that extend the state of the art. This process requires critical thinking, creativity, and persistence, and results in the ability to independently formulate and solve complex research challenges.

In addition to technical expertise, a PhD fosters a broad range of **transferable skills**. These include problem-solving, analytical reasoning, scientific writing, project management, and communication of complex ideas. PhD students also develop the ability to critically evaluate existing work, design rigorous methodologies, and interpret results in a meaningful and responsible way.

Such skills are highly valued in academia, and also in industry, public sector institutions, and entrepreneurial environments.

A PhD opens diverse career pathways. For those interested in academia, it is a necessary step towards positions such as **postdoctoral researcher, assistant professor, and research scientist**. Beyond academia, PhD graduates are increasingly sought after in industry, particularly in areas such as artificial intelligence, data science, engineering, and innovation-driven sectors.

The ability to tackle complex, open-ended problems and to generate new insights makes PhD holders valuable contributors in leadership, research and development, and strategic roles.

Research conducted during a PhD often addresses challenges of societal relevance. In fields such as Human-Centred AI, this includes the development of technologies that are **ethical, transparent, and aligned with human needs**. Through their work, PhD students contribute to technological progress, informed decision-making, and the broader advancement of society.

A PhD is also a process of significant **personal development**. It requires resilience, independence, and the ability to navigate uncertainty. Students learn to manage long-term projects, overcome setbacks, and refine their ideas through continuous feedback and iteration.

This journey fosters intellectual maturity and confidence, preparing individuals for complex professional environments and lifelong learning.

Pursuing a PhD is a demanding but highly rewarding endeavor. It offers the opportunity to develop as a researcher, contribute to scientific knowledge, and engage with a global academic community. Students should approach this path with **curiosity, commitment, and a clear sense of purpose**, recognizing both the challenges and the long-term value of doctoral studies.

2 How to Start Doing Research and Necessary Skills

Beginning a PhD involves a transition from structured learning to **independent research**. This transition can be challenging, as research problems are often open-ended, uncertain, and without predefined solutions. Developing an effective approach early on is essential for long-term success.

2.1 Getting Started with Research

The first step in research is to develop a clear understanding of the **state of the art**. Students are expected to engage in systematic reading of high-quality papers from leading journals and conferences in their field. This process helps identify existing methods, limitations, and open challenges.

It is recommended to begin with **survey papers and recent top-tier publications**, followed by more focused reading in a specific subtopic. Regular discussions with the supervisor are essential for refining the research direction and avoiding overly broad or unclear problem definitions.

A key milestone is the ability to **formulate a research question**. A good research question is specific, relevant, and addresses a gap in existing knowledge. Early-stage research often involves reproducing existing methods, exploring datasets, and conducting preliminary experiments to build intuition and technical confidence.

2.2 Developing a Research Workflow

Effective research requires a structured workflow. Students should learn to:

- systematically review and organize literature,
- maintain clear notes and research logs,
- design experiments and evaluate results,
- iteratively refine hypotheses and approaches.

Research is inherently iterative. Initial ideas are often refined or replaced as new insights are gained. Students should be prepared to adapt their approach based on evidence and feedback.

2.3 Core Skills for PhD Research

Successful PhD students develop a combination of **technical, analytical, and communication skills**. These include:

Analytical and critical thinking: the ability to evaluate existing work, identify limitations, and reason about complex problems.

Technical skills: depending on the field, this may include programming, data analysis, mathematical modeling, and use of research tools and frameworks.

Experimental design and evaluation: the ability to design meaningful experiments, select appropriate metrics, and interpret results in a rigorous manner.

Scientific writing: the ability to clearly communicate ideas, methods, and findings in written form, following academic standards.

Communication and collaboration: presenting research, engaging in discussions, and working effectively with supervisors and collaborators.

2.4 Learning Through Practice

Research skills are developed through **active practice**. Students are encouraged to implement methods from the literature, replicate experiments, and gradually extend existing approaches. Writing early drafts of papers, even for internal use, is strongly recommended, as it helps structure thinking and identify gaps in understanding.

Regular feedback from supervisors and peers plays a critical role in this process. Students should actively seek feedback and be open to revising their ideas and approaches.

2.5 Managing Uncertainty and Expectations

Unlike coursework, research does not guarantee immediate results. Periods of uncertainty, negative results, and failed experiments are a normal part of the process. Developing **resilience and persistence** is therefore essential.

Students should focus on steady progress, maintaining realistic expectations, and building confidence over time. Structured planning, regular meetings, and consistent effort contribute significantly to successful outcomes.

Starting research is a gradual process that combines learning, experimentation, and critical reflection. By building strong foundations in both knowledge and skills, and by engaging actively with the research process, PhD students can develop into independent researchers capable of making meaningful scientific contributions.

3 Identifying Research Questions and Formulating Hypotheses

A central component of PhD research is the ability to identify **meaningful research questions** and to formulate **testable hypotheses**. This process lies at the core of scientific contribution and requires both deep understanding of the field and critical reflection on existing work.

3.1 Starting from the State of the Art

The process of identifying research questions begins with a thorough understanding of the **state of the art**. Students are expected to systematically read and analyze high-quality publications from leading journals and conferences in their field. This includes not only recent papers, but also foundational works that define the key concepts and methodologies.

Particular attention should be given to **survey papers and PhD theses of leading researchers**. PhD theses are especially valuable, as they typically provide a comprehensive overview of a research area, clearly articulate limitations of existing approaches, and explicitly identify **open research questions and future directions**. Engaging with such materials enables students to position their work within a broader scientific context and to avoid duplication of existing efforts.

3.2 From Understanding to Question Formulation

Once a solid understanding of the literature is established, students should focus on identifying **gaps, limitations, and unresolved challenges**. These may arise from:

- limitations in current methods or models,
- lack of evaluation in realistic or diverse settings,
- inconsistencies or contradictions in reported results,
- emerging application needs or societal challenges.

A strong research question is **specific, relevant, and researchable**. It should address a clearly defined problem and be grounded in the existing literature. Importantly, the question should lead to a potential contribution that advances knowledge in a meaningful way.

3.3 Formulating Hypotheses

In many research contexts, particularly empirical and experimental studies, research questions are further refined into **hypotheses**. A hypothesis is a **testable statement** that proposes a relationship between variables or predicts an outcome.

Well-formulated hypotheses should be:

- **clear and precise,**
- **grounded in theory or prior work,**
- **testable through experiments or analysis.**

Hypotheses guide the design of experiments and evaluation protocols, providing a structured approach to validating research ideas.

3.4 Iterative Refinement

The process of identifying research questions and hypotheses is inherently **iterative**. Initial ideas are often refined as new insights are gained through reading, experimentation, and discussion with supervisors. Students should expect to revisit and adjust their research questions throughout the early stages of their PhD.

Regular interaction with the supervisor and research group is essential in this process, helping to ensure that the research direction remains focused, relevant, and feasible. Therefore, a PhD student should seek opportunities to present their work as often as possible to get comments, questions and feedback.

Developing strong research questions and hypotheses is a skill that evolves over time. By engaging deeply with the literature, critically analyzing existing work, and continuously refining ideas, PhD students can identify impactful research directions and lay the foundation for meaningful scientific contributions.

4 Funding Opportunities for Conferences and Doctoral Consortia

Participation in major international conferences is a key component of PhD training. It provides opportunities to present research, receive feedback, engage with leading experts, and build professional networks. Recognizing the importance of student participation, many organizations and conferences offer **financial support mechanisms** to facilitate attendance.

4.1 Doctoral Consortia and Travel Support

Many leading conferences organize **Doctoral Consortia (DC)**, which are dedicated forums for PhD students to present their research, receive feedback from senior researchers, and engage with peers at similar stages. Acceptance to a doctoral consortium is highly valuable and often comes with **financial support**, which may include travel grants, accommodation, or registration fee waivers.

Organizations such as the **ACM (Association for Computing Machinery)** and **IEEE (Institute of Electrical and Electronics Engineers)** regularly provide **student travel grants and scholarships** for conferences under their sponsorship. These grants are typically competitive and awarded based on the quality of the application, research relevance, and student need.

4.2 Student Volunteer Programs

Many major conferences offer **Student Volunteer (SV) programs**, which allow students to assist in the organization of the event in exchange for benefits such as **free or reduced registration, access to sessions, and networking opportunities**. Volunteering provides valuable insight into the academic community and facilitates interaction with organizers, speakers, and other participants.

Participation in such programs is particularly recommended for early-stage PhD students, as it offers an accessible entry point to major conferences even without an accepted paper.

4.3 Awards and Scholarships

Both ACM and IEEE, as well as individual conferences, offer a range of **awards and scholarships** targeted at students. These may include best paper or best student paper awards, diversity and inclusion scholarships, regional travel support, and merit-based research awards. Applying for such opportunities is strongly encouraged, as they not only provide financial support but also contribute to the student's academic profile and recognition within the community.

4.4 Institutional and Project-Based Funding

In addition to conference-organized support, students may have access to funding through **institutional resources, research projects, and international collaborations**. This includes support from faculty budgets, externally funded research projects (e.g., Horizon Europe, COST actions), and mobility programs such as **Erasmus+** and **CEEPUS**. Students should proactively discuss funding opportunities with their supervisors and stay informed about available calls and deadlines.

4.5 Funding Opportunities in Bosnia and Herzegovina

PhD students at the University of Sarajevo may also access funding through national and regional mechanisms. In Bosnia and Herzegovina, **cantonal and entity-level ministries** regularly provide

support for research activities, conference participation, and mobility. For example, the **Ministry of Education, Science and Youth of Canton Sarajevo** announces annual calls that may include funding for student research activities and conference travel.

At the federal level, the **Federal Ministry of Education and Science (FMON)** provides funding programs that support scientific research, including **participation in international conferences, publication support, and mobility**. These calls are typically issued on an annual basis and are competitive.

Additionally, research funding is often available through **projects led by professors and supervisors**. Students are encouraged to actively participate in such projects, as they may include allocated budgets for travel, dissemination, and training. Engagement in research projects not only supports funding opportunities but also strengthens integration into ongoing research activities and collaborations.

Securing funding for conference participation requires **early planning and active engagement**. Students are encouraged to regularly monitor conference websites, ministry calls, and institutional announcements for funding opportunities.

Participation in conferences should be viewed not only as a cost, but as an **investment in academic development, visibility, and future career opportunities**.

5 Formalities: Starting Your PhD Studies

Starting a PhD at the Faculty of Electrical Engineering, University of Sarajevo (ETF UNSA), requires completing several formal and administrative steps. These steps ensure that the student is properly enrolled, supervised, and aligned with institutional and research expectations. While some procedures may evolve over time, students are expected to closely follow faculty regulations and consult with their supervisors and the doctoral studies office throughout the process.

5.1 Supervisor

The first and most important step in starting a PhD is identifying a suitable **supervisor (mentor)**. The supervisor should be a faculty member whose research expertise aligns with the student's intended topic. Students are encouraged to review faculty research profiles, ongoing projects, and publications before initiating contact.

Establishing a clear mutual understanding with the supervisor is essential from the outset. This includes agreement on the **research direction, expectations, working style, and publication strategy**. In some cases, a **co-supervisor** may also be appointed, particularly when interdisciplinary expertise or international collaboration is involved.

Once formally enrolled, the supervisor assumes a central role in guiding the research process and supporting the student's academic development. This includes providing **expert feedback, strategic direction, and mentorship** in defining the research problem, methodology, and dissemination of results.

At the same time, PhD studies require a high degree of **independence and initiative**. Students are expected to actively organise their research, manage their time effectively, and take responsibility for their progress. Regular communication with the supervisor is essential, and students should **submit written work at agreed intervals** for feedback and discussion.

In most cases, the supervisory relationship functions effectively and constructively. However, if difficulties arise, for example due to extended absence of the supervisor, changes in research direction, or personal or professional reasons, students are encouraged to seek support. In such situations, the

student may contact the **Chair of the Doctoral Studies Council**, the **department doctoral studies coordinator**, or other relevant faculty representatives. These discussions aim to resolve issues constructively and, if necessary, to consider adjustments to the supervision arrangement in accordance with faculty procedures.

5.2 Enrollment as a PhD Student

After securing a supervisor, the candidate must formally **enroll in the PhD program** at ETF UNSA in accordance with the official call for applications. Enrolment without a supervisor is possible but not advised since student might risk of losing too much time in securing the supervisor and area of working and topic direction. The enrollment process typically includes submission of academic transcripts, proof of prior qualifications (e.g., MSc degree), and other required documentation as defined by the faculty.

UNSA curriculum from 2024 can be found here.

5.3 Registration of the PhD Thesis Topic

Within a defined period after enrollment, the student is required to formally **register the PhD thesis topic and define the PhD project**. This process involves submitting a research proposal that outlines the problem statement, objectives, methodology, and expected contributions.

The proposal is evaluated by a designated academic committee, which may request revisions before approval. The approval of the thesis topic marks an important milestone, as it formally establishes the research direction and enables structured progress monitoring.

5.4 PhD Program (Curriculum)

PhD studies at ETF UNSA typically include both **coursework and independent research**. The curriculum is designed to provide advanced knowledge in the chosen field, as well as to develop research and academic skills.

Students are expected to complete required and elective courses, participate in seminars, and fulfill any additional program-specific obligations. The balance between coursework and research may vary depending on the program structure, but the overall goal is to support the development of high-quality scientific contributions.

5.5 Progress Log

All PhD students are advised to maintain a **progress log** throughout the duration of their studies. The progress log serves as an official record of academic and research activities and supports structured monitoring of the student's development.

The progress log should include documentation of **research progress, action plans, and milestones**, as well as records of **meetings with the supervisor and advisor**. In addition, students are expected to record their participation in **seminars, conferences, courses, workshops, and other forms of postgraduate training**.

Maintaining a consistent and well-structured progress log is essential for ensuring transparency, facilitating communication with supervisors, and supporting periodic evaluations of progress. The log may also be required as part of formal reporting procedures within the doctoral program.

The PhD progress log should be regularly updated and reviewed in consultation with the supervisor. It is recommended that entries are made after key activities, such as supervisory meetings,

completion of research milestones, or participation in academic events. Example of PhD log can be found [here](#).

5.6 Doctoral Programs and Research Training Opportunities

In addition to the standard PhD curriculum, students are encouraged to engage in broader **doctoral programs, research networks, and training initiatives**. These may include participation in international collaborations, mobility programs, workshops, and specialized training schools.

Such opportunities are essential for developing research independence, expanding professional networks, and gaining exposure to international research environments. Students should actively seek and discuss these opportunities with their supervisors as part of their overall PhD.

6 Funding Opportunities for Conferences and Doctoral Consortia

Participation in major international conferences is a key component of PhD training. It provides opportunities to present research, receive feedback, engage with leading experts, and build professional networks. Recognizing the importance of student participation, many organizations and conferences offer **financial support mechanisms** to facilitate attendance.

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Securing funding for conference participation requires **early planning and active engagement**. Students are encouraged to regularly monitor conference websites, ministry calls, and institutional announcements for funding opportunities.

Participation in conferences should be viewed not only as a cost, but as an **investment in academic development, visibility, and future career opportunities**.

7 Formalities: Finishing Your PhD Studies

This phase represents the culmination of the candidate's research work and requires careful preparation in both scientific and administrative aspects. Students are expected to closely follow faculty procedures and coordinate all steps with their supervisor and the doctoral studies office.

7.1 Submission of the Thesis

Once the supervisor confirms that the doctoral thesis has reached the required level of scientific quality and completeness, the student proceeds with the **submission of the thesis**.

In addition to the thesis manuscript, the submission process typically includes supporting documentation such as a supervisor's approval, proof of fulfilled program requirements, and evidence of published research outputs. The thesis is then formally registered for evaluation.

7.2 Assessment of the Thesis

Following submission, the thesis undergoes a formal **evaluation process**. An assessment committee is appointed by the faculty, consisting of experts in the relevant field. The committee members are defined by the rules and more than 50% of committee member need to be unbiased towards PhD candidate. The committee reviews the thesis with respect to its **originality, scientific contribution, methodological rigor, and relevance to the field** and based on the Working thesis defense.

Based on the evaluation and the working thesis defense, the committee prepares a written report. This report may recommend acceptance, request minor or major revisions, or, in rare cases, rejection. The student is required to address any requested revisions before proceeding to the next defense stage. The thesis is then made available for public evaluation for a month.

7.3 Thesis Defense

After a positive evaluation, the student is invited to the **public defense of the doctoral thesis**. The defense is conducted before an academic committee and is open to the public, in accordance with faculty regulations.

During the defense, the candidate presents the main contributions of the research, followed by questions and discussion with the committee members. The defense assesses not only the quality of the thesis, but also the candidate's ability to **articulate, justify, and critically reflect on their work**. The presentation of the motivation, state-of-the-art, key contributions, results and conclusions should be around 40-45 minutes.

Upon successful completion of the defense, the committee makes a final decision regarding the acceptance of the thesis. After fulfilling any remaining administrative requirements, the candidate is awarded the doctoral degree.

Students are encouraged to plan the final phase of their PhD studies carefully, allowing sufficient time for thesis writing, revisions, and administrative procedures. Close coordination with the supervisor and adherence to faculty deadlines are essential to ensure a smooth and timely completion of the doctoral process.

8 Scientific Diplomacy

Scientific diplomacy refers to the use of **scientific collaboration and knowledge exchange** as a means to foster international cooperation, build trust between institutions and countries, and address global challenges. In contemporary research environments, science increasingly operates across national and disciplinary boundaries, making scientific diplomacy an essential component of academic practice.

For PhD students and researchers, scientific diplomacy is reflected in **international collaboration, mobility, and participation in global research networks**. Engaging with researchers from different countries and institutions contributes not only to scientific excellence but also to the development of shared standards, methodologies, and values.

Collaborative projects, joint publications, and participation in international conferences and research initiatives enable researchers to position their work within a broader context and to contribute to addressing complex societal challenges, such as sustainability, healthcare, and technological transformation.

At the institutional level, scientific diplomacy strengthens the **visibility, reputation, and partnerships** of universities and research laboratories. For institutions such as the Faculty of Electrical Engineering at the University of Sarajevo, active engagement in international research collaborations supports integration into the European Research Area and enhances opportunities for funding, mobility, and knowledge transfer.

Participation in initiatives such as **European research projects, COST actions, Erasmus+ programs, and bilateral collaborations** represents key mechanisms through which scientific diplomacy is operationalized. These activities contribute to capacity building, exchange of best practices, and long-term strategic partnerships.

Researchers engaged in international collaboration are expected to demonstrate not only technical expertise, but also **intercultural communication skills, openness, and professional integrity**. Effective scientific diplomacy requires the ability to collaborate across different cultural, institutional, and disciplinary contexts.

PhD students are encouraged to actively participate in international activities, including research visits, joint workshops, and collaborative publications. Such experiences contribute to the development of a global research perspective and enhance career opportunities.

8.1 Scientific Diplomacy in Human-Centred AI

In the field of Human-Centred AI, scientific diplomacy plays a particularly important role, as research often intersects with **societal values, ethical considerations, and policy frameworks**. International collaboration is essential for ensuring that AI systems are developed in a **responsible, inclusive, and globally aligned manner**.

Through collaboration with partners from academia, industry, and the public sector, researchers contribute to shaping standards, policies, and best practices that influence the deployment and impact of AI technologies.

Scientific diplomacy is an integral part of modern research practice. By engaging in collaborative and international activities, PhD students contribute not only to scientific progress but also to the **strengthening of global research communities and mutual understanding**. Developing these competencies is essential for building a sustainable and impactful academic career.

9 PhD Publication Policy

This section presents an overview of the main research areas of the Human-Centered AI Lab Sarajevo. It is designed as a practical guide to support PhD students in shaping their publication strategy, positioning their research within the international scientific landscape, and progressively building a strong and coherent academic profile. The venues listed in the following sections reflect the primary research directions of the lab and indicate where high-quality contributions are expected to be disseminated. This document should be understood as guidance rather than a strict set of rules. Publication planning is a strategic process that depends on the maturity of the research, its contribution, and the specific subfield. For this reason, all decisions regarding submission targets and timelines must be made in close collaboration with supervisors and advisors, ensuring both scientific quality and realistic planning.

During the course of the PhD, students are expected to produce at **least 3 substantial research contributions** that are published in recognized venues. One of these contributions should be a journal paper in the core area of research, published in a venue indexed in Web of Science and ranked in the first or second quartile (Q1 and Q2). In addition to this, students are expected to publish at least one paper at a top-tier conference ranked A or A* according to CORE rankings, as well as one additional conference paper at a minimum B level, appropriately aligned with their specific research domain. The selection of venues should reflect the community in which the student's work is positioned. For example, research in social robotics should be submitted to venues that are recognized within that community, such as the International Conference on Social Robotics. Journal quality and ranking can be easily be assessed through Web of Science Journal Info, while conference rankings can be verified through the CORE ranking system. However, these metrics should not be used mechanically, but rather as part of a broader strategic discussion with advisors.

Beyond publications, PhD training in HCAI places strong emphasis on academic development and integration into the research community. Students are expected to attend at least one summer or winter school in their field, as well as to participate in at least one doctoral consortium. These experiences are essential for developing research maturity, receiving structured feedback, and building international collaborations. It is important to note that major conferences often provide financial support for students who are accepted to doctoral consortia or have papers in the main program, making participation both feasible and highly valuable.

A central expectation throughout the PhD is continuous engagement with the scientific literature. Students should regularly follow major conferences and journals in their field and maintain a steady reading practice of approximately two to three research papers per week. This habit is essential for understanding the state of the art, identifying research gaps, and developing critical thinking.

Equally important is the way research contributions are conceptualized. The focus should not be on producing isolated papers. Students should focus on developing a coherent set of contributions that together form a clear and meaningful PhD narrative. Each publication should articulate a well-defined novelty and demonstrate its relevance to the field. Students are encouraged to aim for ambitious venues while maintaining a balanced and realistic publication strategy that ensures both quality and continuity of outputs.

PhD students in Human-Centred AI are expected to embrace the interdisciplinary nature of the field. High-quality research in this area requires strong technical foundations in artificial intelligence, machine learning, or robotics, and also a deep consideration of human factors, interaction, ethics, and societal impact. Engaging with this broader perspective is essential for producing research that is both scientifically rigorous and meaningful in real-world contexts.

Below is a list for Human-Centered AI related fields. For other fields a good guidance is provided by Washington State University and Google Scholar Metrics in individual subcategories.

9.1 Types of Research Papers and Research Contributions

In the context of a PhD within the Human-Centred AI Lab Sarajevo, it is essential to distinguish between different types of research papers and to understand what qualifies as a **scientific contribution**. Not all publications carry the same weight in advancing knowledge, and not all are considered equivalent when evaluating PhD progress.

A **research contribution** is defined as a **novel and non-trivial addition to scientific knowledge** that is supported by appropriate methodology and validation. This may include proposing a new method, model, framework, dataset, or theoretical insight, providing a new understanding of an existing problem, or demonstrating a meaningful improvement over prior work. A valid contribution must be clearly positioned with respect to the state of the art and supported by **rigorous experimental, analytical, or user-centred evaluation**. In Human-Centred AI, this often includes user studies, explainability analysis, and interdisciplinary insights that combine technical and human factors.

The primary form of publication for establishing PhD contributions is the **full research paper**. Such papers present **original work** with a clearly defined research question, methodology, and evaluation, and they form the **core outputs of the PhD**. Students are expected to target high-quality journals and conferences for these contributions, ensuring both scientific rigor and relevance to the research community.

Review papers serve an important but distinct role. They provide a structured synthesis of existing literature, identify trends, highlight research gaps, and offer critical perspectives on the development of a field. Writing a review paper is highly beneficial for developing a deep understanding of the research area and for positioning one's own work within it. However, review papers generally **do not qualify as primary research contributions**, as they do not introduce fundamentally new methods, models, or empirical findings. Their value lies in **consolidation and critical analysis rather than innovation**, and they should therefore be considered complementary to original research outputs.

Demo papers are particularly relevant in applied domains such as robotics, human-computer interaction, and AI systems. These papers typically present a working system or prototype and emphasize system integration, usability, and real-world applicability. They are valuable for demonstrating the **practical relevance of research** and for engaging with the community. However, unless they are accompanied by **clear methodological novelty or substantive experimental insight**, demo papers alone are usually **not considered sufficient as standalone research contributions**. They are best positioned as complementary outputs that support and illustrate core research results.

Case study papers focus on the in-depth analysis of specific applications, deployments, or real-world scenarios. In Human-Centred AI, these often involve user studies, field evaluations, or domain-specific investigations. When designed with **methodological rigor** and when they provide **generalizable insights**, case studies can constitute meaningful research contributions. However, purely descriptive case studies without analytical depth or broader implications are typically considered limited in contribution.

PhD students are expected to build a **balanced publication portfolio**, centred around strong and original research contributions. Complementary outputs such as review papers, demo papers, and case studies can enhance visibility, understanding, and impact, but they should support rather than replace core scientific contributions. Each publication should contribute to a **coherent research narrative** and clearly advance knowledge within the field.

9.2 On Multidisciplinary Venues and Publication Quality

In planning PhD publications, it is important to distinguish between **journal ranking** and **scientific positioning within a research community**. While some multidisciplinary journals, such as **IEEE Access**, are indexed in Web of Science and may be ranked as **Q1**, they are typically **broad-scope venues** with a wide thematic coverage and a different review model compared to highly selective, field-specific journals.

For the purposes of establishing **core PhD contributions**, priority should be given to **well-established, domain-specific journals and conferences** that are recognized as leading venues within a particular research community. These venues ensure that the work is evaluated by **expert reviewers in the specific field**, and that it is positioned within the **state of the art of that community**. In contrast, multidisciplinary venues often emphasize rapid dissemination and accessibility, which may result in **less focused evaluation with respect to a specific research domain**.

Therefore, while publications in multidisciplinary journals can be valuable for **visibility, dissemination, and industrial relevance**, they are generally **not considered sufficient as primary or core PhD contributions** within HCAI. Such publications should be viewed as **complementary outputs**, rather than replacements for targeted contributions in top-tier journals and conferences of the field.

Students should also be aware of the broader landscape of academic publishing, including the presence of **predatory or low-quality publishers**. These venues often prioritize publication volume and fees over rigorous peer review, and may lack transparency, editorial standards, or scientific credibility. A frequently discussed example in the community is **MDPI**. While some MDPI journals are indexed and may have impact factors, concerns have been raised regarding **review quality, turnaround times, and editorial practices**. As a result, publications in such venues should be approached with caution and **carefully discussed with supervisors before submission**.

As a general rule, PhD students should prioritize venues that demonstrate **strong peer-review standards, clear editorial boards, established reputation within the field, and recognition by the research community**. When in doubt, the decision about publication targets should always be made in consultation with advisors, ensuring alignment with both **scientific quality and long-term research impact**.

9.3 Peer Review Process in Journals

Major computer science journals follow a structured **peer review process** to ensure the quality, validity, and originality of submitted research. After submission, a manuscript is first screened by the **editor-in-chief or an associate editor** to assess its relevance to the journal's scope and its basic level of quality. Papers that pass this initial screening are assigned to **expert reviewers** in the field.

The review process is typically conducted in a **single-blind**

9.4 Peer Review Process and Interaction with Reviewers

Major computer science journals follow a structured **peer review process** to ensure the quality, validity, and originality of submitted research. After submission, a manuscript is first screened by the **editor-in-chief or an associate editor** to assess its relevance and baseline quality. Papers that pass this stage are assigned to **expert reviewers** with relevant domain expertise.

The review process is typically conducted in a **single-blind or double-blind setting**, aiming to reduce bias and ensure fair evaluation. Reviewers assess submissions based on **novelty, technical**

soundness, methodological rigor, clarity, and relevance. In Human-Centred AI, additional criteria such as **quality of user studies, explainability, reproducibility, and ethical considerations** are often central.

Single-Blind and Double-Blind Review Peer review is commonly conducted under either a **single-blind** or a **double-blind** model. In a **single-blind review**, the reviewers know the identities of the authors, while the authors do not know the identities of the reviewers. This model is often used in journals and allows reviewers to consider the broader context of the work, including prior publications by the authors. However, it may introduce potential bias, whether positive or negative. In contrast, a **double-blind review** ensures that both the reviewers and the authors remain anonymous to each other during the evaluation process. The goal of this model is to promote a more **objective and impartial assessment**, focusing solely on the quality and contribution of the submitted work, independent of the authors' identity, affiliation, or reputation.

Many major computer science conferences, particularly those ranked **A and A* according to CORE rankings**, adopt the **double-blind review process**. This is especially common in fields such as machine learning, computer vision, natural language processing, and human-computer interaction. Authors are therefore required to anonymize their submissions, removing identifying information and following specific guidelines provided by the conference. Understanding the review model of a target venue is important for proper submission preparation. In the case of double-blind review, failure to adequately anonymize a manuscript may lead to desk rejection or disadvantage during evaluation.

Journal vs. Conference Review in Computer Science In computer science, both journals and conferences play a central role, but their review processes differ in important ways. **Journals** typically allow for multiple rounds of revision and provide more extensive feedback, supporting the gradual improvement of a manuscript. The review cycle is longer, but often more thorough, with a strong emphasis on completeness and depth.

In contrast, **conferences** usually operate under strict deadlines and fixed decision timelines. Reviews are often shorter, and decisions are made in a single round, sometimes followed by a rebuttal phase. Top-tier conferences (A* and A-ranked) are highly competitive and emphasize **novelty and timely contributions**, while journals tend to emphasize **completeness, robustness, and extended evaluation**.

Both publication types are essential, and PhD students are expected to strategically target both, depending on the maturity and nature of their work.

Objectivity and Role of Reviewers Although peer review involves human judgment, reviewers in established venues are expected to adhere to **high standards of objectivity, professionalism, and fairness**. They are selected based on expertise and are guided by ethical principles, including **confidentiality, impartiality, and constructive feedback**. The presence of multiple reviewers and editorial oversight further contributes to balanced and informed decisions.

It is important to recognize that disagreement between reviewers can occur. The editorial process is designed to reconcile such differences and reach a fair outcome. Authors should therefore interpret reviews as part of a broader evaluation process rather than as absolute judgments.

Responding to Reviewer Feedback Engaging with reviewer comments is a critical skill in academic publishing. Students are expected to respond in a **clear, structured, and respectful manner**, even when they disagree with specific points. A good response should:

- address each comment individually and precisely,
- clearly indicate changes made in the manuscript (preferably in some other color in text),
- provide justification when suggestions are not followed,
- maintain a professional and constructive tone throughout.

Critical feedback should not be interpreted negatively, but rather as an opportunity to improve the work. Strong revisions and well-argued responses significantly increase the likelihood of acceptance in subsequent review rounds.

Understanding the peer review process and learning how to interact effectively with reviewers are essential components of PhD training. Successful researchers view peer review not as a barrier, but as an integral part of **scientific quality assurance and knowledge refinement**.

9.5 Becoming a Reviewer

During the course of their PhD and early research career, students will increasingly be invited to contribute to the academic community as **reviewers**. This is an important professional responsibility and a key step in becoming an independent researcher.

The process of becoming a reviewer typically begins through **recommendation by a supervisor** or through active involvement in a research group. Supervisors may suggest their PhD students as reviewers to journal editors or program committees, particularly when the student has developed expertise in a specific topic. In some cases, students may initially contribute as **sub-reviewers**, working under the guidance of their supervisor to gain experience in evaluating scientific work.

Another pathway is through **publishing in reputable venues**. Authors who have published in a conference or journal may later be invited to review for the same or related venues, as they are recognized as emerging experts in the field. Maintaining an up-to-date academic profile (e.g., institutional webpage, Google Scholar) increases visibility and the likelihood of such invitations.

Students may also proactively engage by **expressing interest to editors or program committees**, particularly in workshops or smaller conferences, where new reviewers are often welcomed. Participation in the research community, including attending conferences and networking, further facilitates these opportunities.

Responsibilities and Expectations Reviewing requires a high level of **professionalism, objectivity, and confidentiality**. Reviewers are expected to provide **fair, constructive, and well-justified feedback**, focusing on the quality and contribution of the work. It is essential to respect deadlines and to decline review invitations when there is insufficient expertise or time to perform a thorough evaluation.

Students are encouraged to approach reviewing as a **learning opportunity**. Reading and evaluating other researchers' work helps to develop critical thinking, improves understanding of publication standards, and enhances one's own writing and research design.

Ethical Considerations Reviewers must adhere to strict ethical standards, including **confidentiality of the manuscript**, avoidance of conflicts of interest, and impartial evaluation. Any potential conflict should be declared to the editor or program chair before accepting the review assignment.

Engaging in peer review is an integral part of academic development. Students should gradually take on reviewing responsibilities under supervision, building experience and confidence. Over time, this contributes not only to personal growth, but also to the **collective quality and integrity of the research community**.

9.6 How to Write a Scientific Review

Writing a high-quality review is an essential academic skill and an important responsibility within the research community. A good review is **objective, constructive, and well-structured**, aiming not only to evaluate the work but also to help improve it.

General Principles A reviewer should approach each paper with **fairness and professionalism**, focusing on the content rather than the authors. Reviews should be **clear, specific, and justified**, avoiding vague statements. It is important to maintain a respectful tone, even when the paper has significant weaknesses.

Structure of a Review A well-written review typically includes the following components:

Summary: Begin with a brief summary of the paper in your own words. This demonstrates understanding and helps contextualize your evaluation.

Strengths: Identify the main positive aspects of the work, such as novelty, methodological soundness, clarity, or relevance.

Weaknesses: Clearly describe the limitations of the paper. These may relate to insufficient novelty, weak evaluation, unclear methodology, missing comparisons, or lack of clarity.

Detailed Comments: Provide specific and actionable feedback. This may include suggestions for improving experiments, clarifying explanations, adding references, or strengthening the discussion.

Recommendation: Conclude with an overall assessment (e.g., accept, weak accept, borderline, reject), consistent with the criteria of the venue.

Evaluation Criteria When reviewing a paper, the following criteria are typically considered:

- **Novelty:** Does the paper present new ideas or insights?
- **Technical soundness:** Are the methods correct and well-justified?
- **Experimental validation:** Are the experiments sufficient and properly designed?
- **Clarity:** Is the paper clearly written and well-structured?
- **Relevance:** Is the work appropriate for the venue and field?

Good Practices A strong review should be **constructive and actionable**. Instead of simply stating that something is unclear or insufficient, the reviewer should suggest how it can be improved. When possible, references to relevant literature can be provided to guide the authors.

Reviewers should also be aware of their own limitations. If a paper falls outside their expertise, or if there is a conflict of interest, the review invitation should be declined.

Common Pitfalls Reviewers should avoid overly harsh or dismissive language, as well as unsubstantiated claims. It is important not to impose personal preferences (e.g., specific methods or approaches) unless they are clearly justified. The goal is to evaluate the work on its own merits.

Writing reviews is a valuable learning process. It helps develop critical thinking, improves understanding of publication standards, and enhances one's own research and writing skills. PhD students are encouraged to approach reviewing as an opportunity for **professional growth and contribution to the scientific community**.

10 Ethics in Academic Research and Publishing

Ethical conduct is a fundamental component of academic research and publishing. PhD students are expected to adhere to the highest standards of **integrity, transparency, and responsibility** in all aspects of their work. This includes the design and execution of research, the reporting of results, and interactions with collaborators and the broader scientific community.

Authorship and Contributions One of the central ethical aspects in academic publishing is the correct assignment of **authorship**. Authorship should be limited to individuals who have made a **substantial intellectual contribution** to the research. This typically includes involvement in the conception of the work, development of methodology, execution of experiments, analysis and interpretation of results, or writing and revising the manuscript.

All authors should agree on the authorship order and take responsibility for the content of the publication. Practices such as **gift authorship** (including individuals who did not contribute) and **ghost authorship** (excluding individuals who made significant contributions) are considered unethical and must be avoided.

Acknowledgments Contributions that do not meet the criteria for authorship should be recognized in the **acknowledgments section**. This may include technical assistance, administrative support, access to resources, or general guidance. Funding sources, project affiliations, and institutional support should also be clearly acknowledged, ensuring transparency regarding the context in which the research was conducted.

Research Integrity and Reporting Researchers are expected to present their findings in a **truthful and accurate manner**. Fabrication, falsification, or selective reporting of results are serious violations of academic integrity. All data, methods, and assumptions should be reported with sufficient clarity to allow **reproducibility**.

Proper citation of prior work is essential. Students must ensure that all relevant sources are appropriately referenced, avoiding **plagiarism**, including self-plagiarism. When using external datasets, code, or tools, proper attribution and compliance with licensing conditions must be ensured.

Collaboration and Professional Conduct Academic research is often collaborative. Students are expected to engage with collaborators in a **respectful, transparent, and fair manner**. Responsibilities, expectations, and contributions should be discussed openly at the beginning of a collaboration to avoid misunderstandings.

Conflicts of interest, whether personal, financial, or professional, should be disclosed where relevant. Maintaining **professional integrity** in communication, authorship decisions, and dissemination of results is essential for sustaining trust within the research community.

Ethical Responsibility in Human-Centred AI In fields such as Human-Centred AI, additional ethical considerations apply, particularly when research involves human participants, user data, or societal impact. Students must ensure compliance with relevant ethical standards, including **informed consent, data protection, and responsible use of AI technologies**. Ethical approval procedures, where required, must be followed before conducting studies.

Adhering to ethical principles is a core value of academic work. Ethical research practices contribute to the **credibility, reliability, and long-term impact** of scientific contributions.

11 List of Publications Target Venues in HCAI

11.1 Guidelines for Interpreting Journal and Conference Rankings

Journal quartiles are indicative and must be verified at the time of submission using the latest Web of Science / Journal Citation Reports and CORE portal information. Rankings may change from year to year, and some journals and conferences may be ranked differently across subject categories. Therefore, students and supervisors should confirm the current status finalising a submission target.

11.2 Artificial Intelligence and Machine Learning

Journal	Scimago	WoS/JCR	GS Top-20
Journal of Machine Learning Research (JMLR)			Yes
Artificial Intelligence (AIJ)			–
Journal of Artificial Intelligence Research (JAIR)			–
IEEE Transactions on Neural Networks and Learning Systems (TNNLS)			Yes
Machine Learning Journal (MLJ)			–
IEEE Transactions on Knowledge and Data Engineering (TKDE)			–
ACM Transactions on Knowledge Discovery from Data (TKDD)			–
IEEE Transactions on AI (TAI)			–
Transactions on Machine Learning Research			–

Table 1: Top journals in Artificial Intelligence and Machine Learning

Conference	CORE Rank	GS Top-20
Neural Information Processing Systems (NeurIPS)	A*	Yes
International Conference on Machine Learning (ICML)	A*	Yes
International Conference on Learning Representations (ICLR)	A*	Yes
AAAI Conference on Artificial Intelligence (AAAI)	A*	Yes
International Joint Conference on Artificial Intelligence (IJCAI)	A*	Yes
Conference on Uncertainty in Artificial Intelligence (UAI)	A	–
European Conference on Artificial Intelligence (ECAI)	A	–

Table 2: Top conferences in Artificial Intelligence and Machine Learning

11.3 Data Science

Journal	Scimago	WoS/JCR	GS Top-20
ACM Transactions on Data Science (TDS)			–
Data Mining and Knowledge Discovery			Yes
IEEE Transactions on Big Data			–
Journal of Data Science			–
Big Data (Mary Ann Liebert)			–
Knowledge and Information Systems (KAIS)			–
SIAM Journal on Mathematics of Data Science			–
Statistics and Computing			–

Table 3: Top journals in Data Science

Conference	CORE Rank	GS Top-20
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)	A*	Yes
The Web Conference (WWW)	A*	Yes
IEEE International Conference on Data Mining (ICDM)	A	–
SIAM International Conference on Data Mining (SDM)	A	–
ACM International Conference on Web Search and Data Mining (WSDM)	A*	Yes
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML–PKDD)	A	–
Conference on Information and Knowledge Management (CIKM)	A	–
International Conference on Data Engineering (ICDE)	A*	–

Table 4: Top conferences in Data Science

11.4 AI, Automated Planning and Reasoning

Journal	Scimago	WoS/JCR	GS Top-20
Artificial Intelligence (AIJ)			–
Journal of Artificial Intelligence Research (JAIR)			–
Autonomous Agents and Multi-Agent Systems (JAAMAS)			–
IEEE Transactions on Artificial Intelligence (T-AI)			–
ACM Transactions on Intelligent Systems and Technology (TIST)			–

Table 5: Top journals in AI, Automated Planning and Reasoning

Conference	CORE Rank	GS Top-20
International Conference on Automated Planning and Scheduling (ICAPS)	A*	–
International Joint Conference on Artificial Intelligence (IJCAI)	A*	Yes
AAAI Conference on Artificial Intelligence (AAAI)	A*	Yes
International Conference on Principles of Knowledge Representation and Reasoning (KR)	A*	–
Conference on Uncertainty in Artificial Intelligence (UAI)	A	Yes
International Conference on Autonomous Agents and Multiagent Systems (AAMAS)	A*	–
European Conference on Artificial Intelligence (ECAI)	A	–

Table 6: Top conferences in AI, Automated Planning and Reasoning

11.5 Natural Language Processing

Journal	Scimago	WoS/JCR	GS Top-20
Computational Linguistics (MIT Press)			–
Transactions of the ACL (TACL)			–
Natural Language Engineering			–
IEEE/ACM Transactions on Audio, Speech and Language Processing			–

Table 7: Top journals in Natural Language Processing

Conference	CORE Rank	GS Top-20
Annual Meeting of the ACL (ACL)	A*	Yes
Conference on Empirical Methods in NLP (EMNLP)	A*	Yes
NAACL	A	Yes
EACL	A	Yes
COLING	A	–

Table 8: Top conferences in Natural Language Processing

11.6 Computer Vision

Journal	Scimago	WoS/JCR	GS Top-20
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)			Yes
International Journal of Computer Vision (IJCV)			Yes
Pattern Recognition			Yes
IEEE Transactions on Image Processing (TIP)			–

Table 9: Top journals in Computer Vision

Conference	CORE Rank	GS Top-20
Computer Vision and Pattern Recognition (CVPR)	A*	Yes
International Conference on Computer Vision (ICCV)	A*	Yes
European Conference on Computer Vision (ECCV)	A*	Yes
British Machine Vision Conference (BMVC)	A	–
Winter Conference on Applications of Computer Vision (WACV)	A	–

Table 10: Top conferences in Computer Vision

11.7 Robotics and Autonomous Systems

Journal	Scimago	WoS/JCR	GS Top-20
IEEE Transactions on Robotics			–
IEEE Robotics and Automation Letters (RA-L)			–
Autonomous Robots			–
Journal of Autonomous Agents and Multi-Agent Systems			–
IEEE Transactions on Robot Learning			
Robotics and Autonomous Systems			

Table 11: Top journals in Robotics

Conference	CORE Rank	GS Top-20
International Conference on Robotics and Automation (ICRA)	A*	–
Intelligent Robots and Systems (IROS)	A*	–
Robotics: Science and Systems (RSS)	A*	–
ACM/IEEE Human-Robot Interaction (HRI)	A*	–
IEEE RO-MAN	B	–

Table 12: Top conferences in Robotics

11.8 AI Ethics and Responsible AI

Journal	Scimago	WoS/JCR	GS Top-20
AI and Ethics (Springer)			–
ACM Journal on Responsible Computing			–
Ethics and Information Technology			–
IEEE Technology and Society Magazine			–

Table 13: Top journals in AI Ethics and Responsible AI

Conference	CORE Rank	GS Top-20
ACM Conference on Fairness, Accountability, and Transparency (FAccT)	A	–
AAAI/ACM Conference on AI, Ethics, and Society (AIES)	A	–
IEEE International Symposium on Ethics in Engineering	B	–

Table 14: Top conferences in AI Ethics and Responsible AI

11.9 Artificial Intelligence and Educational Technology

Journal	Scimago	WoS/JCR	GS Top-20
International Journal of Artificial Intelligence in Education (IJAIED)			–
Computers & Education			Yes
IEEE Transactions on Learning Technologies (TLT)			–
British Journal of Educational Technology (BJET)			–
Educational Data Mining (Journal of EDM)			–
ACM Transactions on Computing Education (TOCE)			–
Learning Analytics			–
User Modeling and User-Adapted Interaction (UMUAI)			–
International Journal of Educational Technology in Higher Education (ETHE)			–

Table 15: Top journals in Artificial Intelligence and Educational Technology

Conference	CORE Rank	GS Top-20
International Conference on Artificial Intelligence in Education (AIED)	A*	–
International Conference on Learning Analytics and Knowledge (LAK)	A	–
ACM SIGCHI Conference on Computer-Supported Cooperative Work and Social Computing (CSCW)	A*	Yes
CHI Conference on Human Factors in Computing Systems (CHI)	A*	Yes
European Conference on Technology-Enhanced Learning (ECTEL)	B	–
Conference on Innovation and Technology in Computer Science Education (ITiCSE)	B	–
Conference on International Computing Education Research (ICER)	B	–

Table 16: Top conferences in Artificial Intelligence and Educational Technology

11.10 Human–Computer Interaction

11.10.1 Journals

Journal	Scimago	WoS/JCR	GS Top-20
ACM Transactions on Computer–Human Interaction (TOCHI)			–
Human–Computer Interaction			–
International Journal of Human–Computer Studies (IJHCS)			–
IEEE Transactions on Human–Machine Systems			–
Computer Supported Cooperative Work (CSCW Journal)			–
Behaviour & Information Technology			–
Interacting with Computers			–
Universal Access in the Information Society			–

Table 17: Top journals in Human–Computer Interaction

11.10.2 Conferences

Conference	CORE Rank	GS Top-20
CHI Conference on Human Factors in Computing Systems (CHI)	A*	Yes
ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW)	A*	Yes
ACM Symposium on User Interface Software and Technology (UIST)	A*	–
ACM International Conference on Interactive Systems (IUI)	A	–
ACM Designing Interactive Systems Conference (DIS)	A	–
ACM Conference on Human Factors in Computing Systems Asia (CHI Asia)	A	–
ACM Conference on User Modeling, Adaptation and Personalization (UMAP)	A	–
ACM International Conference on Pervasive Computing and Communications (PerCom)	A	–

Table 18: Top conferences in Human–Computer Interaction

11.11 Information Retrieval

Journal	Scimago	WoS/JCR	GS Top-20
Information Retrieval Journal (Springer)			–
ACM Transactions on Information Systems (TOIS)			–
IEEE Transactions on Knowledge and Data Engineering (TKDE)			–
Information Processing & Management (IP&M)			Yes
Journal of the Association for Information Science and Technology (JASIST)			Yes
ACM Transactions on Knowledge Discovery from Data (TKDD)			–

Table 19: Top journals in Information Retrieval

Conference	CORE Rank	GS Top-20
International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)	A*	Yes
ACM International Conference on Web Search and Data Mining (WSDM)	A*	Yes
The Web Conference (WWW)	A*	Yes
ACM Conference on Information and Knowledge Management (CIKM)	A	–
European Conference on Information Retrieval (ECIR)	A	–
ACM Conference on Recommender Systems (RecSys)	A	–
International Conference on Theory of Information Retrieval (IC-TIR)	A	–

Table 20: Top conferences in Information Retrieval