Artificial Intelligence for Innovation and Entrepreneurship

Master, 3 ECTS
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Prerequisites:

No prior knowledge or specific skills are required for the successful completion of the 'AI for Innovation and Entrepreneurship' course. This module is constructed to be universally accessible, encompassing a broad spectrum of learners irrespective of their educational background. Whether you possess a technical or non-technical discipline, or have previous experience with coding or mathematics, the course delivers compelling and pertinent content that is comprehensible and applicable to all. Moreover, this inclusivity extends to interested Bachelor's students who are eager to broaden their horizons and delve into the fascinating world of AI in innovation and entrepreneurship. All students who are intellectually curious and ambitious to harness the transformative power of AI are heartily encouraged to participate.

Learning Outcomes:

Upon successful completion of the "AI for Innovation and Entrepreneurship" course, students will have cultivated a variety of technical and transferable skills that will empower them to thrive in the AI era:

- **AI Fundamentals**: Regardless of their previous knowledge, students will develop a robust understanding of core AI concepts, machine learning methodologies, and the state of the art in the field. They will learn to navigate the AI landscape confidently, acquiring the language and conceptual tools to engage in strategic and technical discussions and decisions.

- **AI in Practice**: Students will gain hands-on experience in ideating, assessing, and implementing AI use cases, both in the context of existing organizations and new startups. They will learn to identify opportunities for AI application, understand the technical requirements for their realization, and address potential challenges effectively.

- **Entrepreneurial Competence**: The course equips students with the essential skills to establish and lead AI startups. Students will learn about the startup process in the AI field, from identifying promising use cases to realizing them in a business context.

- **Organizational Leadership**: The course prepares students to drive AI initiatives within various organizational settings. They will learn to create effective AI strategies, understand the nuances of AI integration in different sectors, and navigate the unique challenges of AI-first organizations.

- **Societal and Ethical Implications**: Students will critically examine the societal impact of AI, exploring both its transformative potential and ethical challenges. This holistic perspective will enable them to create AI solutions that are not only innovative but also responsible and human-centric.
Through this course, students will not only broaden their knowledge of AI, but also enhance their problem-solving, strategic thinking, and entrepreneurial skills. This unique combination will position them to become influential actors and innovators in the rapidly evolving AI landscape, irrespective of their academic background.

Teaching/Learning Methods:

In the "AI for Innovation and Entrepreneurship" course, we employ a range of dynamic teaching and learning methods that not only deliver a comprehensive understanding of AI and its practical applications in the real world but also promote mindfulness.

The course follows an engaging lecture style, utilizing storytelling, real-world examples, and case studies to make complex AI concepts tangible and relatable. These methods provide students with an in-depth understanding of the subject matter.

Each lecture, lasting between 60 to 90 minutes, incorporates interactive elements such as Slido for real-time participation, quizzes, and in-class surveys, promoting an active learning environment.

Furthermore, we appreciate the importance of a balanced learning experience. Therefore, we intersperse lectures with short mindfulness exercises. These practices aim to improve focus, reduce stress, and enhance the overall learning experience, creating a harmonious learning environment.

In addition to theoretical learning, we host short keynotes by field experts, organizational leaders, and startup pioneers to provide students with real-world insights into AI. This balance of theory and practice offers a well-rounded view of the field, aiding in the students' understanding and appreciation of AI.

Complementing the lectures, online exercises, readings and case studies allow students to apply the concepts they've learned, reinforcing their understanding and enabling them to independently handle real-world scenarios.

Our students' feedback speaks for the course's effectiveness and appeal:

- "One of the best courses I've ever taken at TUM."
- "I learned a lot of new things, and I'm sure this knowledge will be useful in my future career."
- "Definitely my favorite course."
- "Amazing lecturer, great course and content, one of the most interesting courses I've attended in my master's program."
- "It was amazing to see how many sides of AI were discussed."

Join this dynamic learning journey and empower yourself to become a leader in the AI age while enjoying a mindful and balanced learning experience.
Content:

The "AI for Innovation and Entrepreneurship" course takes you on an immersive journey into the fascinating world of AI, offering a comprehensive, 360-degree view of the field. Whether you are a tech enthusiast looking to delve deeper into the AI landscape or a curious mind from a non-tech background, this course has something for everyone. Designed to be highly interactive and hands-on, the course is centered around practical applications that have been tested in real-world scenarios.

Here are the key components of the course:

1. **Introduction to AI**: Understand the foundational principles of AI, differentiating it from traditional programming and appreciating the role of machine learning.
2. **ML Under the Hood**: Delve into the intricacies of machine learning models, their techniques, and the pivotal role of a data scientist.
3. **Generative AI and Prompt Engineering**: Discover generative AI and prompt engineering, supplemented by hands-on sessions for practical understanding.
4. **AI for Entrepreneurship**: Learn about the benefits and challenges of AI in entrepreneurship, and explore the dynamics of AI startups.
5. **AI Strategy**: Develop strategic thinking around the application of AI in organizations and learn how to set up an effective AI strategy.
6. **AI Use Cases**: Understand machine learning capabilities and the process of ideating and evaluating AI use cases.
7. **Data Thinking, Data Literacy & Data Strategy**: Appreciate the value of data, become data literate, and understand the process of setting up a data strategy.
8. **ML Life Cycle**: Learn how to implement AI throughout the machine learning lifecycle and get introduced to the concept of MLOps.
9. **Governance & AI Ethics**: Explore the governmental framework on AI ethics, grapple with ethical challenges, and delve into the concept of building human-centered AI.
10. **Generative AI and the Society**: Understand the societal implications of generative AI, enriched by a film screening and panel discussion.
11. **History of Automation, Future of Work, Superintelligence**: Discuss the wider impact of AI on society, delve into the history of automation, and ponder the future of work.
12. **AI Pitches and Introduction to the AI Entrepreneurship Ecosystem**: Participate in an interactive session where you will pitch your own AI ideas and get introduced to the AI and entrepreneurship ecosystem.

Embark on this exciting learning journey with us and empower yourself to apply AI innovatively, whether in establishing startups, driving organizational changes, or exploring AI's societal implications. Unleash your potential and transform yourself into a leader in the era of AI.

The "AI for Innovation and Entrepreneurship" course is offered by TUM in partnership with the appliedAI Institute for Europe. Leveraging appliedAI's mission to foster deep understanding and proficient application of AI, this course aims to provide students with the
vital skills to navigate and shape the dynamic landscape of AI in business. More details about appliedAI Institute for Europe can be found at https://www.appliedai-institute.de/.

**Indicative Readings:**