Innovating in Artificial Intelligence (AI)

Course aims

This seminar prepares you for your Master's thesis. You will choose a topic in one of the given topic areas or an adjacent topic area (see below “Choosing your topic”) and develop a research question that you seek to answer in your seminar paper. You will write a seminar paper, present your work in class, and discuss a fellow student's seminar paper.

The goal of the seminar is to practice relevant skills for your Master's thesis. These skills include among others: framing a topic, identifying the relevant conversation in the literature, critically reviewing the literature, practicing empirical methods of research, and reflecting on your own work. You will practice scientific writing, presenting, and discussing. Students will deepen their knowledge of innovation management in general and attain specialist knowledge on their selected topic.

Assessment

Grading is based on a written seminar paper (60%), the presentation of the seminar paper (30%), and a presentation reviewing another participant's paper (10%).

In order to receive a grade, you will need to complete all three obligatory assignments. Extra points may be earned through active and constructive participation in in-class discussions.

Supervisor

You will be supervised by Prof. Dr. Joachim Henkel and Philipp Hartmann. Please contact Philipp Hartmann (philipp_hartmann@tum.de) for any questions (Note: Please register using the seminar placement tool).

Preliminary course outline

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<th>Date</th>
<th>Focus/ Deliverable</th>
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<tr>
<td>10.04.2018</td>
<td>Kick-off</td>
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<tr>
<td>04.05.2018 latest</td>
<td>Submission of your outline via moodle</td>
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<tr>
<td>04.05.2018 latest</td>
<td>One-on-one session 1: Research question and outline (20 min)</td>
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<tr>
<td>01.06.2018 latest</td>
<td>Submission of your status quo via moodle</td>
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<tr>
<td>04./05./07.06.2018 (tbd)</td>
<td>One-on-one session 2: Status-quo (20 min)</td>
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<tr>
<td>19.06.2018 latest</td>
<td>Submission of the status-quo of your paper to your discussion partner and via moodle</td>
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<td>25.06.2018</td>
<td>Submission of presentations via moodle</td>
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<td>26./27.06.2018 (tbd)</td>
<td>Presentations and discussions</td>
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<tr>
<td>06.07.2018 latest</td>
<td>Hand in your paper</td>
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<td>Hard copy at our chair and digital version (Word &amp; pdf file) via moodle and Turnitin</td>
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Choosing your topic

Once you have received confirmation of your participation in the seminar, you may indicate your two preferred topic areas. You may also suggest your own topic idea outside of the given topic areas. However, please restrict your suggestions to topic areas adjacent to the general theme of the seminar. This will allow for a lively in-class discussion and valuable feedback to you by the other participants of the course.

The topic areas given below are rather broad, which gives you considerable freedom to develop an interesting research question in the respective topic area you choose. The literature provided for each topic area provides a starting point for various possible research questions within the respective topic area.

Innovating in AI – Background and motivation

From self-driving cars to "intelligent" voice-enabled personal assistants: Artificial Intelligence is already used by leading Tech companies today. But AI might also change the technology base of many different industries including healthcare, manufacturing and insurance. Therefore, many established companies are trying to adapt to this change and use this emergent technology for developing new products and services or improve existing processes.

There are various instruments companies can use to adapt to new technologies. From acquisition of start-up companies to innovation competitions like Kaggle. The aim of this seminar is to research the use of such instruments by established companies to adapt to Artificial Intelligence as a new technology. In particular, the seminar shall cover the following four topic areas.

Topic Area 1: Adapting to Discontinuous Technological Change

For some industries, AI will act as a discontinuous innovation, changing the fundamental sources of value. For example, emerging drug research companies like BenevolentAI have their key capabilities in developing AI systems instead of lab-based research.

Incumbent companies have different options to adapt to discontinuous technological change, e.g. by building up new capabilities internally or by acquiring the technology externally. The goal of this topic is to study the adaptation strategies of incumbent companies within specific industries. You should identify adaptation strategies from the literature and use empirical data, e.g. news articles or patent data, to study the use of these different approaches empirically.

Some literature on this topic:

Topic Area 2: Technology acquisition strategies in AI

One specific option to adapt to new technology is to acquire the technology from external sources. What is the purpose of technology acquisitions? What are the instruments? Do companies rather buy technology that is closely related to their core products or further away? You could, e.g., analyze the most active acquirer(s) or analyze the strategies of competing companies from the same industry. A patent analysis might help to understand technological relatedness.

Some literature on this topic:


Topic Area 3: Corporate Venture Capital and AI

Companies use Corporate Venture Capital (CVC) to invest in startup companies not only to generate financial returns but also gain access to new technologies. CVC is also used for investments in AI startup companies. You might address questions such as: What is the purpose of CVC in general, and how do companies use CVC in the context of AI? You could analysis empirical data (e.g. using Crunchbase) on CVC within specific or across different industries.

Some literature on this topic:


Topic Area 4: Crowdsourcing innovation in AI

Another way to innovate in a new technology is to use innovation competitions. In the context of data science, Kaggle is the most prominent platform on which companies can organize competitions related to specific datasets they upload.

The goal of this topic is to shed some light on those competitions. Which companies engage in these competitions? What are the results? Who are the participant? There are several potential data sources that could be exploited: Kaggle offers data on all past competitions as well as the results of a recent survey among their members.

Some literature on this topic: