INVITATION TO WRITE YOUR BACHELOR THESIS AT CP

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Institute of Computational Perception (CP)

GENERAL INFORMATION

- Institute of Computational Perception at JKU

  - Head: Prof. Widmer (Wittgenstein Prize, 2 x ERC Advanced Grants)

  - Focus: Artificial intelligence, machine learning, signal processing

- We offer two ways to find a suitable bachelor thesis topic

  - Take a look at the list of theses and projects available at CP

    - I will present the major thematic areas that we offer in a moment

  - If you have a particular interest that matches with the competences of one of our lecturers, then just contact this lecturer and see if this interest can be developed towards a suitable bachelor thesis topic

    - I will also present our lecturers and their competences

THEMATIC AREAS AT CP (1)

■ Machine Learning and Artificial Intelligence: Much of our research applies Machine Learning and AI, but we are also interested in improving or understanding Learning in general
  ☐ Interpretable machine learning
  ☐ Generative models (e.g. for audio)

■ Intelligent Audio Processing: Our institute is heavily involved in research on Intelligent Audio Processing, so we offer a variety of projects involving audio data and machine learning
  ☐ Sound event detection & classification
  ☐ Anomalous sound detection

■ Intelligent Music Processing: As one of the leading research labs in the fields of Music Computing we offer diverse topics related to AI & Music
  ☐ Real-time score following & accompaniment
  ☐ Instrument detection / music tagging

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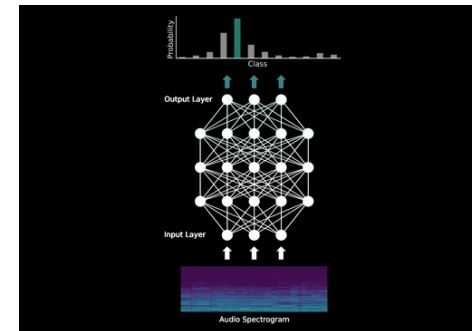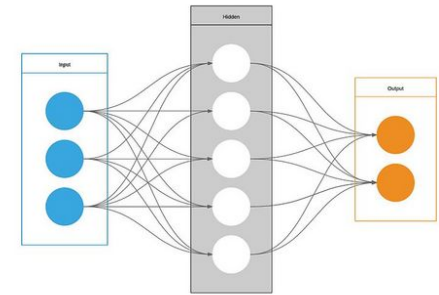
THEMATIC AREAS AT CP (2)

- **Multimedia Data Mining:** Mining of large-scale datasets that include multimedia content and user-generated data is an active area of research
  - ☐ Semantic analysis of text, music, video & metadata
  - ☐ Analyzing and mining online social networks

- **Multimedia Recommender Systems:** We offer topics on user modeling (personality, mood, cognition, or culture) and recommender systems
  - ☐ User-aware & context-aware recommender systems
  - ☐ How to increase transparency of recommendations

- **Natural Language Processing (NLP):** We offer many topics on deep learning models in NLP
  - ☐ Green NLP (resource efficiency of NLP models)
  - ☐ NLP in various applications and domains

- **And maybe also take a look at:** Digital Image Processing, Biometric Identification, Cryptography

PEOPLE & COMPETENCES AT CP (1)

- Gerhard Widmer: Artificial Intelligence (AI), Machine Learning and Pattern Classification, Probabilistic Models

- Markus Schedl: Learning from User-generated Data, Multimedia Data Mining, Multimedia Search and Retrieval, Social Media Mining

- Josef Scharinger: Cryptography, Biometric ID, Image Processing

- Katharina Hoedt: AI (focus on Interpretable Machine Learning)

- Navid Rekab-Saz: Natural Language Processing (focus on Deep Learning)

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PEOPLE & COMPETENCES AT CP (2)

- Jan Schlüter: Machine Learning and Pattern Classification, Audio and Music Processing, Artificial Intelligence, Probabilistic Models

- Paul Primus: Machine Learning and Audio, Probabilistic Models

- Florian Schmid: Acoustic Scene Classification, Audio Tagging, Audio Classification

- Silvan David Peter, Carlos Eduardo Cancino-Chacon: Symbolic Music Processing

- Oleg Lesota: Learning from User-generated Data

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TO SUM UP: IMPORTANT INFORMATION AT A GLANCE

- Theses and Projects at CP: https://www.jku.at/en/institute-of-computational-perception/teaching/theses-and-projects/

- Lecturers at CP: https://www.jku.at/en/institute-of-computational-perception/about-us/people/

- Contact person for your Bachelor Thesis in Computer Science at CP: Josef Scharinger (Josef.Scharinger@jku.at), lecturer for „Project Practical" (CourseId: 344.007)

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