

Researcher in Artificial Intelligence / Machine Learning

Position Information:

Topic: Implementation of AI in Construction Design

Department: Control and Monitoring of Intelligent Buildings

Reports to: A team leader of programming team

No Positions offered: 1

Closing date: 31.10.2019

How to apply: applications must be submitted by email to: gabriela.urbaskova@cvut.cz

1. About Organization

University Centre for Energy Efficient Buildings of the Czech Technical University in Prague (UCEEB) is a national center of excellence focused on energy efficient buildings. UCEEB was founded as an independent research institute of the Czech Technical University in Prague combining interdisciplinary teams from areas of architecture, building engineering, mechanical engineering, electrical engineering, energy, environment, sociology and biomedicine.

We have a dedicated team, state-of-art technologies and an extremely interesting field of research for the future.

By combination of new knowledge across research disciplines and cooperation with commercial sector, we contribute to the application of results, which are beneficiary for individuals, society and environment. We aim to contribute to the development of buildings that do not harm the environment, but also provide reasonable comfort for people.

2. Summary of the Role

We are looking for ambitious MSc graduate or PhD student in Artificial Intelligence / Machine Learning focusing on AI disciplines, such as applied mathematics, machine learning, deep learning who will join our team which is working on project regarding use of AI in building industry.

The main objective of this role is to develop a software for the analysis and design of layouts of the office buildings, as a tool for architects in early design stages. This work involves close cooperation with our architects, sociologists and psychologists.

The developed software will work as follows:

1. Reading clients' requests for premises in the building
2. Determination of limitations (technological & operational) based on the trained expert system
3. Optimization of space and generation of several solutions

The second output of this project work will be a publicly available document which will be created in cooperation with Siemens company. This document will aim to present the main challenges and drivers of the construction transformation with an emphasis on the digitization and use of AI. The document will monitor the possibilities of using modern technologies and procedures to achieve 5 strategic goals for the construction sector:

- Speed of construction
- Social aspects
- Use of local materials and resources
- Modifiability and recyclability
- Potential of smart energy grids

The post holder will be expected to:

- Design and develop a software to display a design of a building
- Collaborate with other scientists and stakeholders to develop a framework (document) for AI-driven digitalization in the construction industry
- Engage with scientists and operators to understand the workflow associated with the forecast production and offer technical solutions related to product generation.
- Engage and collaborate with companies such as Siemens and use of artificial intelligence in the field of building energy
- The main research areas relevant to these positions involve probabilistic machine learning, Bayesian statistics, (Bayesian) optimization, time series analysis, probabilistic programming, graphical models/causal inference, probabilistic deep learning and natural language processing/understanding (NLP/U)

3. Scientific Profile Requested

Requirements:

- Experience with state-of-the-art libraries for machine learning and related areas (Natural Language Understanding, Computer Vision, Machine Learning, Algorithmic Foundations of Optimization, Data Mining or Machine Intelligence/Artificial Intelligence)
- Programming experience in one or more of the following: C, C++ and/or Python.

Personal attributes:

- Analytical and mathematical mindset
- Collaborative mindset
- Problem-solving skills with a proactive approach
- Ability to work in a heterogeneous working environment
- Dedication and enthusiasm to work in a small team
- Strong communication skills, verbally and in writing
- Ability to work well as part of a team, taking the lead on some topics, contributing to others

Qualification and experience required:

Education	MSc graduate or PhD student or PhD degree holder in engineering, physics, statistics, mathematics, cognitive sciences or other quantitative areas.
Experience:	Very good demonstrated experience of probabilistic modelling, machine learning, statistics and computation.
Knowledge and skills (including language):	Good knowledge of Bayesian statistics and the research conducted on AI. Candidates must be able to work effectively in English and interviews will be conducted in English.

4. Other Information

Salary: The salary is competitive, depending on qualifications, work experience, and based on the salary scales of the Collective Labour Agreement of the CTU university.

Starting date: November 2019 – January 2020

Length of contract: until the end of December 2020 (possible longer-term prospects; already funding-wise confirmed)

Location: CTU UCEEB, Buštěhrad, Czechia

5. Application and Selection Process

Formal Requirements: The selected candidate must apply before the application deadline by sending all required documents. The candidate that do not fulfil mandatory requirements will be excluded from consideration.

Required documents:

- CV
- Letter of interest
- Scanned copy of MSc or PhD Transcript
- 2 recommendation letters

Evaluation: Based on provided documents of each candidate, the evaluation committee will evaluate and decide whether the candidates will be invited for an interview (can be done online – November 2019). Feedback will be provided to all applicants.

At CTU UCEEB, we consider an inclusive environment as a key for our team and purpose in the field of research. We are dedicated to ensuring a workplace that embraces diversity and provides equal opportunities to all, without distinction as to race, gender, sexual orientation, age and disability. We know that diversity of our employees makes our company stronger.