PhD Position: **Robust and Reliable Visual Localization in a Changing World**

Imagine taking a picture anywhere in the world and instantaneously knowing where you are. Not only is this an intuitive way to obtain information about your surrounding via an Augmented Reality-based assistant, but is also a core competency for autonomous robots. In addition, knowing where you are is essential for 3D reconstruction of scenes, which in turn enables creating massive amounts of 3D data for generative AI and foundation models.

Visual localization is the technology enabling accurately placing a photo in the world. Existing algorithms enable precise localization in static scenes. However, our world is not static, but constantly changing: Day-night changes drastically alter the visual appearance of a scene, while seasonal changes alter most the visual appearance and the scene geometry. State-of-the-art visual localization algorithms struggle in changing conditions.
The goal of this PhD project is to develop robust and reliable visual localization approaches that can handle the fact that our world is constantly changing. One potential direction of research is to integrate higher-level scene understanding into the localization process.

The PhD position is at the [Czech Institute of Informatics, Robotics and Cybernetics](#) at the Czech Technical University in Prague, Czech Republic. The position is fully funded and you will be working with Torsten Sattler and his team. The PhD student is expected to either be already located in Prague or to move to Prague for the studies.

Requirements:
- MSc in Computer Science, Informatics, etc.
- Strong background in either (3D) computer vision (with knowledge of Structure-from-Motion, local feature matching, camera geometry estimation) or machine learning for (3D) computer vision.
- Programming experience in Python and / or C++

Application process:
Please contact Torsten Sattler (torsten.sattler@cvut.cz) and provide the following:
- Up-to-date CV
- Transcripts of your Bachelor and Master studies
- Names and emails of up to two references