James Pritts

Web-page · Scholar · Github · Linkedin

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Research Interests

My research is on robust multi-model estimation and minimal solvers with applications to geometric camera auto-calibration, scene-plane rectification and modeling repeated scene content. The goal of future work is to extend these methods to applications in visual localization and feature matching.

Education

Czech Technical University, Prague, Czechia — 2020
PhD candidate, Computer Science (defending Sep. 15, 2020)
Thesis: "Methods for the Rectification of Imaged Coplanar Repeated Patterns"

Czech Technical University, Prague, Czechia — 2013
MSc, Computer Science, with honors

The University of North Texas, Denton, TX — 2002
BSc, Mathematics

Experience

Facebook Reality Labs, AR/VR, Pittsburgh PA — 2019 – Now
Post-Doctoral Research Scientist
Responsible for developing methods for the geometric calibration and auto-calibration of head-mounted capture systems.

BAE Systems, Advanced Information Technologies, Burlington, MA — 2003 – 2008
Lead Software Engineer
Led teams to develop state-of-the-art computer-vision based defense systems. Managed relations with government customers and contractors by serving as the point of contact. Conducted successful program demos and reviews.

NASA, Johnson Space Center, Houston, TX — 1999 – 2000
Researcher
Developed new body tracking technology for the purpose of remotely controlling the robotic arm of the International Space Station.

Publications

Y. Lochman, O. Dobosevych, R. Hryniv, and **J. Pritts**. Minimal Solvers for Single-View Auto-Calibration. In *WACV (accepted)*, 2021

J. Pritts, Z. Kukelova, V. Larsson, Y. Lochman, and O. Chum. Minimal Solvers for Rectifying from Radially-Distorted Conjugate Translations. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2020

J. Pritts, Z. Kukelova, V. Larsson, Y. Lochman, and O. Chum. Minimal Solvers for Rectifying from Radially-Distorted Scales and Change of Scales. *International Journal of Computer Vision*, 128(4):950–968, 2020

J. Pritts, Z. Kukelova, V. Larsson, and O. Chum. Rectification from Radially-Distorted Scales. In *ACCV*, 2018

J. Pritts, Z. Kukelova, V. Larsson, and O. Chum. Radially-Distorted Conjugate Translations. In *CVPR*, 2018

J. Pritts, D. Rozumnyi, M. P. Kumar, and O. Chum. Coplanar Repeats by Energy Minimization. In *BMVC*, 2016

J. Pritts, O. Chum, and J. Matas. Detection, Rectification and Segmentation of Coplanar Repeated Patterns. In *CVPR*, 2014

J. Pritts, O. Chum, and J. Matas. Approximate Models for Fast and Accurate Epipolar Geometry Estimation. In *IVCNZ*, 2013

Awards

Asian Conference on Computer Vision (ACCV) Saburo Tsuji Best Paper Award 2018
for "Rectification from Radially-Distorted Scales"

Computer Vision Winter Workshop (CVWW) Best Presentation Award 2014
for "Detection, Rectification, and Segmentation of Coplanar Repeated Patterns"

Image and Vision Computing New Zealand (IVCVNZ) Best Paper Award 2013
for "Approximate Models for Fast and Accurate Epipolar Geometry Estimation"

Dean's Prize for Outstanding Master's Thesis, CTU in Prague 2013

Supervision

M.Sc. Students:

Yaroslava Lochman — Thesis: "Minimal Solvers for Single-View Auto-Calibration" — 2018 – Now
(after 12/2020 will pursue a PhD at Chalmers University of Technology)

B.Sc. Students:

Kostiantyn Liepieshov — Thesis: "Manhattan Frame Detection in Lens Distorted Images" — 2019 – Now
(now a M.Sc. student at Ukrainian Catholic University)

Academic Activities

Reviewer for ECCV, 3DV

Teaching

Image Retrieval 2017 – 2018
Instructor - Master's level, Ukrainian Catholic University

Pattern Recognition and Machine Learning, AE4B33RPZ 2013 – 2016
TA - Bachelor's level, Czech Technical University in Prague

Invited Talks

Opportunities and Risks of Artificial Intelligence 03/2018
The Aspen Institute's 2018 Young Leader's Program, Tále, Slovakia

Radially-Distorted Conjugate Translations 12/2017
Ukrainian Catholic University Data Science Colloquium, Lviv, Ukraine

Detection, Rectification, and Segmentation of Coplanar Repeated Patterns 07/2017
The Eastern European Computer Vision Conference, Odessa, Ukraine

Visual Recognition in the Wild: Image Retrieval, Faces, and Text 07/2016
The Eastern European Computer Vision Conference, Odessa, Ukraine

Detection, Rectification and Segmentation of Coplanar Repeated Patterns 04/2014
The 34th Pattern Recognition and Computer Vision Colloquium, Prague, Czechia

Programming Skills

Matlab, C/C++, Python, LaTeX