MUXINGZI LI

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SUMMARY

An intellectually curious and self-driven problem solver with a strong mathematical background, as well as hands-on experience in various projects. Featured on the CVPR Daily.

EDUCATION

2018 - 2021
- **PhD in Automation, Signal and Image Processing**
  Inria (in association with Université Côte d'Azur), France
  - Thesis: 3D reconstruction of indoor scenes from smartphone images (Supervisor: Florent Lafarge)

2015 - 2017
- **MS in Applied Mathematics and Computational Science (3.93/4.0 GPA)**
  King Abdullah University of Science and Technology, Saudi Arabia
  - Thesis: Multiple scattering model for Optical Coherence Tomography with Rytov approximation (Supervisor: Wolfgang Heidrich)
  - General Secretary at ACM Student Chapter
    - Organized code clinics for graduate students from different disciplines

2012 - 2015
- **BA in Mathematics (2:1)**
  University of Oxford, UK
  - Met Office Academic Partnership summer intern

PROJECT HIGHLIGHTS

Aug 2020 - Jan 2021
- **3D detection, *Alibaba DAMO Academy – Hangzhou, China***
  Internship at the City Brain Lab, Alibaba DAMO Academy

May 2019 -
- **3D registration, *Inria – Sophia Antipolis, France***
  3D point-to-model rigid registration with an unknown scale:
  - Experimented keypoint-based registration by adapting PointNet++
  - Implemented LM-ICP using CGAL and Ceres libraries with a new loss function incorporating a scaling factor

Apr 2018 - Mar 2019
- **Object polygonalization, *Inria – Sophia Antipolis, France***
  A geometry processing project on polygonal approximation in images:
  - Designed deterministic and stochastic optimization schemes for a discrete optimization problem Outperformed the state-of-the-art methods by 2-6% in terms of accuracy
  - Applied the pipeline for vectorization of floormap images

Jul 2017 - Mar 2018
- **Computational photography, *KAUST – Jeddah, Saudi Arabia***
  A project on dual-camera denoising:
  - Developed an algorithm for fusing images captured by a dual-lens camera in low light, outperforming the state-of-the-art by 2-5% in terms of signal-to-noise ratio
  - Supervised an undergraduate intern on optical flow artifacts detection

Oct 2017 - Feb 2018
- **Biological image analysis, *KAUST – Jeddah, Saudi Arabia***
  A cross-disciplinary project in collaboration with an Environmental Engineering team:
  - Designed a novel pipeline for automatic cleaning and segmentation of biomedical images. Software currently in use at the research team at Water Desalination and Reuse Center in KAUST

Jul 2014 - Sept 2014
- **Data analysis, *Atmospheric Oceanic & Planetary Physics Department – Oxford, UK***
  Internship in collaboration between University of Oxford and University of Reading:
  - Analyzed historical climate data to reveal relation between cyclones and climate change via Monte Carlo simulation. Findings led to a publication in a high-impact journal as the first author

SKILLS

- **Technical**: Working experience in C++, Python, PyTorch3D, CMake, 3D Computer Vision, Machine Learning
- **Language**: English, Mandarin
- **Reviewer** – TPAMI, Optics Express, IEEE Transactions on Medical Imaging
- **Sports**: PADI Advanced Open Water Diver

PUBLICATIONS

- **M. Li**, F. Lafarge, R. Marlet, Approximating shapes in images with low-complexity polygons, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR),* 2020 **[Oral presentation]**
- **M. Li**, P. Tu, W. Heidrich, Robust joint image reconstruction from color and monochrome cameras, *British Machine Vision Conference (BMVC),* 2019
- L. Fortunato, **M. Li**, T. Cheng, Z. U. Rehman, W. Heidrich, T. Leiknes, Cake layer characterization in Activated Sludge Membrane Bioreactors: Real-time analysis, *Journal of Membrane Science*, 578: 163-171, 2019
- **M. Li**, R. Idoughi, B. Choudhury, W. Heidrich, Statistical model for OCT image denoising, *Biomedical Optics Express*, 8 (9): 3903-3917, 2017
- **M. Li**, T. Woollings, K. Hodges, G. Masato, Extratropical cyclones in a warmer, moister climate: A recent Atlantic analogue, *Geophysical Research Letters*, 41 (23): 8594-8601, 2014