Nicolai Häni

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RSN Lab
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Education

2017-Current	**Ph.D. Computer Science, University of Minnesota, Minneapolis, USA** Advisor: Professor Volkan Isler
2013-2015	**M.Sc. Industrial Technologies, Zurich University of Applied Sciences, Zurich, Switzerland** Thesis title: *Development of an Eye-in-Hand Vision System for Orchard Inspection*
2009-2012	**B.Sc. System Engineering, Zurich University of Applied Sciences, Zurich, Switzerland**

Employment History

2017-Current	**Graduate Research Assistant**, Robotic Sensor Networks Laboratory (RSN), University of Minnesota, Minneapolis, USA.
2015-2016	**Software Engineer**, Pix4D SA, Lausanne, Switzerland
2012-2015	**Graduate Research Assistant**, Institute of Mechatronic Systems, Zurich University of Applied Sciences, Zurich, Switzerland

Selected Publications

Häni, N., Roy, P., & Isler, V. (2018a, October). A Comparative Study of Fruit Detection and Counting Methods for Yield Mapping in Apple Orchards. *arXiv:1810.09499 [cs]*. arXiv: 1810.09499. January 27, 2019, 🔗 http://arxiv.org/abs/1810.09499

Häni, N., Roy, P., & Isler, V. (2018b, October). Apple Counting using Convolutional Neural Networks. In *2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (pp. 2559–2565). Madrid, Spain: IEEE. doi:10.1109/IROS.2018.8594304

Becker, C., **Häni, N.**, Rosinskaya, E., d'Angelo, E., & Strecha, C. (2017, May). CLASSIFICATION OF AERIAL PHOTOGRAMMETRIC 3d POINT CLOUDS. *ISPRS Annals of Photogrammetry, Remote Sensing and Spatial Information Sciences*, *IV-1/W1*, 3–10. doi:10.5194/isprs-annals-IV-1-W1-3-2017

Häni, N. & Isler, V. (2016, October). Visual servoing in orchard settings. In *2016 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (pp. 2946–2953). Daejeon, South Korea: IEEE. doi:10.1109/IROS.2016.7759456

Research & Industry Projects

2017-Current	**Research at RSN Lab, University of Minnesota** ● Proposed a new end-to-end deep learning method to count clustered fruits from images in orchard environments. ● Designed a hand-in-eye robotic manipulator system for close up fruit inspection in apple orchards.

Research & Industry Projects (continued)

2015–2016   **Pix4D SA**
- Implemented a novel machine learning pipeline to classify aerial point clouds using local descriptive features in C++.
- Implemented a real-time image processing algorithm to remove sky pixels from the Structure-from-Motion (SfM) pipeline in C++.

2012–2015   **Institute of Mechatronic Systems (IMS), Zurich University of Applied Sciences**
- Implemented a virtual reality-based approach to guide a robotic catheter for cardio-ovascular surgery.
- Developed a high-performance and low-cost mobile mapping device to enable autonomous navigation of a weeding robot

Awards and Achievements

2019   **ASPRS Talbert Abrams Award** for the paper: *Classification of Aerial Photogrammetric 3D Point Clouds*, Lausanne, Switzerland

2018   **Quality Metrics Fellowship**, Department of Computer Science and Engineering, University of Minnesota, USA

2017   **Best Poster Award** for *Robotic Monitoring of Apple Orchards*, 11th Biennial Research Showcase, Department of Computer Science and Engineering, University of Minnesota, USA

2016   **Best Master Thesis Award**, Swiss Society of Advanced Control, Switzerland

Teaching

2017   CSCI 2033, Elementary Computational Linear Algebra

Technical Skills

Programming Languages	C/C++, Python, MATLAB, R, Java, HTML
Software & Libraries	OpenCV, PCL, PyTorch, Tensorflow, LaTex, Github, SVN, Robot Operating System (ROS)