

William Hoff

1575 Adams St • Denver, Colorado 80206 • (720) 938-1555

Email: william.albert.hoff@gmail.com • Website: <https://www.williamhoff.tech/>

SUMMARY OF QUALIFICATIONS

Experienced R&D engineer with strong expertise in computer vision and augmented reality. Extensive experience in new algorithm development, with solid prototyping skills. Successfully conducted projects in both academia and industry. Excellent communication skills and experience in working in multi-disciplinary teams.

PROFESSIONAL EXPERTISE

COMPUTER VISION

- Developed a complete visual Simultaneous Localization and Mapping (SLAM) system while employed at Lockheed-Martin. This reduced autonomous vehicle localization errors by 80%.
- Developed a 3D reconstruction approach for deer and elk antlers (patent applied for).
- Developed a novel object recognition approach while employed at DAQRI Corp. (patent applied for).
- Published more than 75 technical papers.

AUGMENTED REALITY AND MOBILE APP DEVELOPMENT

- Developed Augmented Reality (AR) systems to assist maintenance and inspection tasks.
- Experienced with software tools including OpenCV, Unity, Vuforia Engine, Android Studio, and XCode.
- Taught courses on mobile app development (both iOS and Android), and mentored 30+ student projects.
- Taught graduate level classes on Augmented Reality, using Android, Microsoft HoloLens and MagicLeap.

COMMERCIAL SOFTWARE DEVELOPMENT

- Extensive experience in algorithm development for industrial applications.
- Developed and integrated algorithms into DAQRI smart glasses, using C++, Python, and TensorFlow.
- Taught classes in software engineering, focusing on Agile methodology, test driven development and continuous integration.

COMMUNICATION SKILLS

- Taught and mentored graduate and undergraduate students at the Colorado School of Mines.
 - Received over 30 research and development contracts from industry and government sources.
-

WORK HISTORY

Associate Professor	Colorado School of Mines, Golden, Colorado	1994 – 2020
Visiting Scholar	University of South Australia, Adelaide, South Australia	2019
Principal Engineer	DAQRI Corp., Vienna, Austria	2017 – 2018
Technical Contractor	Lockheed-Martin, Littleton, Colorado	2010

EDUCATION

Ph.D. Computer Science, University of Illinois (Urbana).

M.S. Physics, University of Illinois (Urbana).

B.S. Physics, Illinois Institute of Technology.

SAMPLE OF RECENT GRANTS

William Hoff, Hao Zhang, "Registration and Tracking of a Handheld Device", Metcalf Archaeological Consultants, \$126,392, 2017.

William Hoff, Hao Zhang, "Automated Maintenance Guide," DAQRI Corp., \$30,000, 2016.

William Hoff, "3D Reconstruction from 2D Images Using Shape Priors", Rocky Mountain Scientific Laboratory, \$129,876, 2014-2015.

SAMPLE OF RECENT PUBLICATIONS

Y. Xie, Y. Tang, G. Tang, and W. Hoff, "Learning To Find Good Correspondences of Multiple Objects." *Proc. of International Conference on Pattern Recognition (ICPR)*, 2021.

G. Lee, S. Ahn, W. Hoff, M. Billingham, "Enhancing First-Person View Task Instruction Videos with Augmented Reality Cues." *Proc. of International Symposium on Mixed and Augmented Reality (ISMAR)*, 2020.

H. Sager and W. Hoff. "Pedestrian Detection in Low Resolution Videos Using a Multi-Frame Hog-Based Detector." *International Research Journal of Computer Science (IRJCS)*, Issue 03, Volume 6, pp. 55-71, 2019.

Y. Xie, G. Tang, and W. Hoff, "Chess Piece Recognition Using Oriented Chamfer Matching with a Comparison to CNN," *Proc. of Winter Conference on Applications of Computer Vision (WACV)*, March 2018, Lake Tahoe, Nevada.

F. Han, J. Liu, W. Hoff and H. Zhang, "Planning-based Workflow Modeling for AR-enabled Automated Task Guidance," *Proc of International Symposium on Mixed and Augmented Reality (ISMAR)*, pp. 58-62, October 2017, Nantes, France.

F. Han, B. Reily, W. Hoff, and H. Zhang. "Space-time representation of people based on 3d skeletal data: a review." *Computer Vision and Image Understanding*, vol. 158, pp. 85-105, 2017.

C. Baker and W. Hoff. "DIRSAC: A directed sample and consensus algorithm for localization with quasi-degenerate data." *Journal of Robotics and Autonomous Systems*, vol. 97, pp. 92-107, 2017.

W. Hoff and H. Zhang, "Learning Object and State Models for AR Task Guidance," *Proc of International Symposium on Mixed and Augmented Reality (ISMAR)*, September 2016, Merida, Mexico.

A. Masoud and W. Hoff, "Segmentation and tracking of nonplanar templates to improve VSLAM," *Journal of Robotics and Autonomous Systems*, vol. 86, pp. 29-56, 2016.