

Brian S. Clipp

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Research Interests

Structure from motion/ Simultaneous localization and mapping(SLAM) (Estimation of camera pose (external parameters) and 3D scene geometry from images or video.)

Multi-sensor fusion (Estimation of camera pose and geometric scene structure using vision and other sensors such as GPS, gyros and accelerometers)

Multi-camera systems (Estimation of the pose of systems of many, rigidly-coupled cameras using constraints derived for the total system)

Education

Ph.D. Computer Science, Co-Advisors: Jan-Michael Frahm and Marc Pollefeys, The University of North Carolina at Chapel Hill, 2010 (Expected)

B.S. Computer Engineering, Clemson University, 2004, *Magna Cum Laude*, General and Departmental Honors

Research Experience

Research Assistant 2005-Present
Marc Pollefeys and Gregory Welch UNC Chapel Hill
Developing algorithms for real time 3D reconstruction of urban scenes from video. Developed a multi-camera, Kalman filter based structure from motion system. Working toward 3D reconstruction of city scale scenes using low cost sensors including cameras, GPS and inertial sensors. Extensive experience programming in C++ and Matlab.

Research Assistant 2003-2004
Harlan Russell Clemson University
Studied effect of transmission power variation on throughput and latency in a TDMA ad-hoc wireless network.

Publications

B.Clipp, G. Welch, J.-M. Frahm and M. Pollefeys,
"Structure from Motion via A Two-Stage Pipeline of Extended Kalman Filters", British Machine Vision Conference, September, 2007.

M. Pollefeys, D. Nister, J.-M. Frahm, A. Akbarzadeh, P. Mordohai, B. Clipp, C. Engels, D. Gallup, S.-J. Kim, P. Merrell, C. Salmi, S. Sinha, B. Talton, L. Wang, Q. Yang, H. Stewenius, R. Yang, G. Welch and H. Towles,
"Detailed Real-Time Urban 3D Reconstruction From Video, IJCV special issue on Modeling Large-Scale 3D Scenes

P. Mordohai, J.-M. Frahm, A. Akbarzadeh, B. Clipp, C. Engles, D. Gallup, P. Merrell, S. Slami, S. Sinha, B. Talton, L. Wnag, Q. Yang, H. Stewenius, H. Towles, G. Welch, R. Yang, M. Pollefeys and D. Nister,
"Real-Time Video-Baed Reconstruction of Urban Environments", 3D Arch, July, 2007.

A. Akbarzadeh, P. Mordohai, B. Clipp, C. Engles, D.Gallup, P. Merrell, M. Phelps, S. Sinha, B. Talton, L. Wang, Q. Yang, H. Stewenius, R. Yang, G. Welch, H. Towles, D. Nister, and M. Pollefeys, "Toward Urban 3D Reconstruction from Video", Invited Paper, 3DPVT 2006.

Employment

The University of North Carolina at Chapel Hill
Graduate Research Assistant
Research assistant to Marc Pollefeys, collaborating with Gregory Welch and Jan-Michael Frahm.
See above. Chapel Hill, NC
2005-Present

Naval Surface Warfare Center
Systems Engineer
Software engineer for Tomahawk Missile program using C++ and X windows. Dahlgren, VA
2004-2005

Cryovac, Sealed Air Corporation
Computer Engineering Co-Op
Developed a system to measure irregularly shaped products on a moving production line using a multi-camera system. Duncan, SC
2004-2005

Schlumberger Electricity Inc. (now Itron Inc.)
Computer Engineering Co-Op
Worked on the development of a comercial/industrial electricity meter. Tested the metrology functions of the meter and developed new computer controlled testing equipment to facilitate meter validation in LabView. West Union, SC
2001-2003

Teaching

"Simultaneous Localization and Mapping," UNC Chapel Hill robotics class voted best student lecture, October 2006.

"An Introduction to LIDAR Reconstruction of Urban Scenes, the Global Positioning System and Inertial Navigation," UNC Chapel Hill, September 2006.

"An Introduction to Kalman Filtering and its Application to Computer Vision," UNC Chapel Hill, March 2006.

Service

President, Eta Kappa Nu Electrical and Computer Engineering Honor Society, Clemson University
2003-2004

Treasurer, Eta Kappa Nu, Clemson University 2003-2004

Treasurer, Tau Beta Pi, Clemson University 2003-2004

Honors and Awards

Best Demonstration at Computer Vision and Pattern Recognition 2007 for "Real Time 3D Reconstruction of Urban Scenes from Video"

Calhoun Honors College General and Departmental Honors, Clemson University, 2004

Tau Beta Pi, 2003

Eta Kappa Nu 2002