

## CURRICULUM VITAE

## BRIAN D. BUE

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### PROFILE

- **Five years of interdisciplinary research experience**
- **Practiced programmer in C, C++, C#, Java**
- **Experience with technical computing environments including Mathematica, Matlab, R**
- **Adept UNIX user, with in-depth knowledge of Linux, BSD, Solaris**
- **Proficient with scripting and markup languages including Perl, PHP, BASH, HTML, LaTeX**
- **Graphics programming background using OpenGL and OpenGL ES**
- **Intermediate ArcGIS user with experience using Spatial Analyst extension**
- **Proficient with functional programming languages including Scheme and ML**

### EDUCATION

- **Purdue University, West Lafayette, IN**  
**Master of Science in Computer Science**
  - Coursework: artificial intelligence, computer graphics, algorithms, programming languages, operating systems, numerical analysis, scientific visualization, computational geometry, remote sensing
  - Independent study: "Reverse Pose Estimation"
  - Degree expected May 2006
- **Augsburg College, Minneapolis, MN**  
**Bachelor of Science in Computer Science / Bachelor of Arts in Mathematics**
  - GPA Overall: 3.6, CS: 3.8, Math 3.5
  - Graduated with Distinction May 2003

### HONORS

- **Purdue University Space Shuttle Memorial Fund scholarship** (September 2005 - May 2006)
- **NSF Computer Science, Engineering and Mathematics scholarship** (September 2001 - May 2003)
- **Awarded Computer Science departmental honors** (May 2003)
- **Augsburg Dean's list** (September 2000 - May 2003)
- **Pell grant recipient** (September 2000)
- **Augsburg Legacy scholarship** (September 2000)
- **EM Regents scholarship** (September 2000)

### RESEARCH INTERESTS

- **Knowledge-based image processing, remote sensing, high-level vision, machine learning, artificial intelligence, scientific visualization, pattern recognition, applications in space and physical sciences**

### RESEARCH EXPERIENCE

- **Purdue University Rendering and Perceptualization Lab research assistantship:** Developed software aimed at Tablet and PocketPC platforms for task adaptable information display intended to be used by training, maintenance and emergency response personnel. (August 2005 – Present)
- **Lunar and Planetary Institute visiting graduate student:** Utilized techniques from computer vision and integral geometry to extend existing landform classification algorithm to perform automatic crater counting and characterization. Re-hired after exceptional performance during Summer 2004 internship. (Summer 2005)
- **Independent study project - "Reverse Pose Estimation":** Explored a method to automatically determine a set of "ideal" feature points in a given scene for camera localization based on Fourier analysis techniques. Implemented Matlab programs to locate features in composite images. (Spring 2005)
- **Lunar and Planetary Institute/NASA Johnson Space Center summer internship:** Developed an unsupervised landform classification application used to characterize Martian topographical data. Research involved multispectral image analysis techniques, data mining, and computer vision. Performed extensive

testing and verification in Mathematica and R. (Summer 2004)

- **NSF-ITR Virtual Reality Localization project:** Research focused on the analysis of cues used for localization in virtual environments. Developed a glove manipulator object in OpenScene-Graph/C++ to interface with a 5DT wireless data glove and InterSense tracking system in immersive environments. (Summer 2003)
- **Independent study project - Beowulf Cluster:** Designed and implemented Augsburg's first Linux-based x86 Beowulf cluster. Developed a heterogeneous cluster management system in Perl/BASH. Implemented several parallel algorithms using PVM and LAM-MPI. Presented work at the 2003 Augsburg College Research and Scholarship fair, May 2003. (Spring 2003)
- **Automatic Geophysical Observatories research project:** Developed multithreaded, time-critical applications in C++ designed to measure input from several search coil magnetometers located in the Arctic Circle. Aided in the installation of an unmanned data acquisition system in Sondrestrom, Greenland. Presented work at the 13th annual undergraduate research symposium at Argonne National Laboratories, Argonne IL, and at the 1st annual NSF CSEMS undergraduate research seminar at Augsburg College, Minneapolis, MN. (May 2002 – August 2003)
- **NSF Research Experience for Undergraduates program:** Computer vision research focused on two-dimensional image analysis used in robotic navigation. Developed a composite landmark extraction application utilizing least-squares regression techniques. (Summer 2001)

## PUBLICATIONS

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- *B. Bue and T.F. Stepinski*, "Automated Classification of Landforms on Mars," Article. Elsevier Computers and Geosciences, November 9, 2005.
- *B. Bue and T.F. Stepinski*, "Automatic Classification of Martian Topographical Data," In Proceedings, Lunar and Planetary Institute 2004 Summer Intern Conference, August 12, 2004.
- *B. Bue*, "Composite Landmark Analysis and Extraction for Robot Navigation," Technical Report TR01-13, National Science Foundation Research Experience for Undergraduates Program. August 2001.

## PRESENTATIONS

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- "Machine Detection of Martian Craters from Digital Topography", In Proceedings, 37<sup>th</sup> Lunar and Planetary Science Conference. Lunar and Planetary Institute, Houston, TX. March 2006.
- "Automated Classification of Landforms in Terra Cimmeria, Mars," In proceedings, 36<sup>th</sup> Lunar and Planetary Science Conference. Lunar and Planetary Institute, Houston, TX. March 2005.
- "Automatic Classification of Martian Topographical Data," In proceedings, Lunar and Planetary Institute 2004 Summer Intern Conference. Lunar and Planetary Institute, Houston, TX. August 2004.
- "Design and Implementation of Reliable Data Systems," In proceedings, 13<sup>th</sup> Annual Undergraduate Research Symposium. Argonne National Laboratories, Argonne, IL. October 2002.

## WORK EXPERIENCE

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- **Teaching Assistant, Purdue University Computer Science (August 2004 - May 2005)**  
Courses: C Programming Laboratory, Compilers: Principles and Practice.  
Received high evaluation scores from students in all instructed lab sessions.
- **Application Engineer, Taxi 2000 Corporation, Fridley, MN (March 2004 - June 2004)**  
Developed network layout applications for a personal rapid transit system. Maintained and debugged legacy applications for translation from VB to C++/C#. Assisted in various Windows and UNIX system administration duties.
- **Student Computing Assistant, Augsburg College IT Dept., Minneapolis, MN (October 2000 - June 2003)**  
Provided network support to Augsburg students. Maintained campus printing services. Performed maintenance on campus PC and Macintosh workstations.

## AFFILIATIONS

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- **Chair, Augsburg student chapter of the Association for Computing Machinery (Fall 2002 - Spring 2003)**  
Principally responsible for the creation of Augsburg's chapter. Presided over ACM meetings and guest lectures.

## REFERENCES

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- Available upon request