Bradley L. Walls

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PROFESSIONAL EXPERIENCE:

08/15 – Present: **Graduate Teaching / Research Assistant** – MIS Department, University of Arizona
My lab affiliation is with the Center for Management of Information (CMI) lead by Dr. Jan Nunamaker. Within the CMI lab I have become involved in several ongoing lab projects: PAS, TSIF, and CITeR. My current teaching assistant assignment is MIS688 Master's Consulting Project. In this class a team of five to six students complete a real world project, for a real industry clients who through sponsorship fund real projects. To date activities in this role include: assisting course professors to court new clients for sponsorship and preparing course technology to be made available for student teams. Key Contributions:

- CITeR Proposal Submission: *Data Mining of Social Media Sites to Create Customized Diagnostic Questions for Deception Detection.*

11/06 – Present/Consulting Affiliation: **Senior Scientist** – Arete Associates, Tucson, Arizona
My responsibilities at Arete include the research, prototyping, and development of advanced technologies applied to challenging engineering problems. Problem areas have included: data transmission and simulation, underwater mine hunting, robotics, 3D scene generation, target tracking, lidar sensing algorithms, and complex data analysis. As a member of the Advanced Programs Department I also contribute to proposal, marketing, and business capture activities. Key accomplishments:

- Principle Investigator (PI) and Program Manager (PM) for the Army Research Labs Phase I and Phase II SBIR program, "Bio-Inspired Battlefield Environmental Situation Awareness for Micro-Air Vehicles".
- PI and PM for the Air Force Research Labs Phase I SBIR program, "Micro-Seeker".
- PI and PM for the Office of Naval Research Phase I SBIR program, "Predictive Model for Imaging Underwater Object through the Air-Sea Interface".
- Wrote proposals and lead proposal teams.
- Prototyped advanced algorithms using scripting languages such as MATLAB.
- Implemented algorithms in real-time code on flight qualified hardware using languages such as C/C++.
- Delivered client desktop applications using languages such as Java and C#.
- Experience interfacing with 3rd party libraries to speed development of complex applications.
- Understand and follow sound software development lifecycles, processes, and procedures.
- Regularly prepare and present results of research and develop efforts to peers, executive staff, and clients.

12/04 – 11/06: **Research Engineer -** SAIC, Tucson, Arizona
While a SAIC I researched, developed, and applied advanced image and video processing techniques to complex technological problems. Problem areas are focused on image understanding, pattern recognition, objection detection, and target tracking using electro-optical, infrared, and LADAR sensors. Contributed to business capture endeavors, within areas of expertise, through white paper creation, proposal generation, and marketing activities. Notable accomplishments:

- System Engineering Lead for SAIC on the DARPA Video Verification of Identity (VIVID) program.
- Contributing author to the VIVID Bridge and VIVID Phase II proposal process that resulted in a multi-million dollar contract award.
- Enhanced color normalization and color matching algorithms.
- Created data logging library for use in an embedded real-time processing environment.
- Optimized existing algorithms to meet compute requirements for a VxWorks OS running on a dual PowerPC.
- Completed board bring up for a Curtiss-Wright Raptor SBC.
- Initiated the creation of a subsystem interface control document defining the communication process between subcontractors.
- Researched and analyzed contemporary clustering and context extraction algorithms for LADAR data gathered from the DARPA E3D program.
- Designed and coded a ground extraction algorithm for 3D LADAR data.
- Implemented a volumetric outlier removal algorithm enhancing LADAR target recognition capabilities.

8/99 – 12/04: **Staff Video Software Engineer** - Polycom, Inc., Austin, Texas

For Polycom I designed, developed, and integrated real-time video subsystem software into video conferencing products. Involved in all aspects of the product development cycle; from conceptualization to development through production: "cradle to grave". Experienced at setting and driving engineering development to complete project milestones. Hands on leadership of subsystem development initiatives for implementing video device drivers, product enhancements, and maintenance programs for the ViaVideo, Visual Concert FX, and ViewStation FX products. Instrumental in interviewing, hiring, and assisting executive management in expanding the engineering staff from 30 to over 120 engineers in a three year time period. Key accomplishments:

- Image and video algorithm development tasks included: Format and color space conversion, image warping, temporal filtering, alpha blending, de-interlacing, and image scaling.
- Improved video display quality by creatively applying novel image-enhancement techniques: mosquito filtering and diversity based concealment.
- Regularly reviewed and interpreted industry standards, implementing annexes to improve video codec's.
- Investigated issues surrounding the processing of HD resolutions.
- Created H.264 video diagnostic tools for analyzing motion vector calculations, quantization values, video frame rate, and processor utilization.
- Provided code to create semi-real time JPEG compressed images for Web based remote monitoring and control of a VSX7000 video conferencing system.
- Successfully coded and optimized h26x video codec's for multiple processors. (Intel x86, Philips Trimedia, and Equator MAP-1000/BSP-15)
- Carried out sensor performance analysis on CMOS and CCD sensors.
- Enhanced camera control subsystem by implementing an image based feedback mechanism.
- Developed an innovative high-speed driver solution that connected an embedded processor across a USB link to an RTP stack driver for IP connectivity, while providing application level access for business quality audio and video.
- Directed engineering contractors and integrated resulting work into established projects.

5/94 - 8/99: **Multi-Disciplinary Engineer -** Raytheon Missile Systems Company, Tucson, Arizona
At Raytheon I was successful in the development of a wide array of technologies and products across multiple departments. Increased the depth and breadth of engineering skills through positions of incremental complexity, responsibility and leadership. Notable accomplishments

- Principle Investigator for the Office of Naval Research, China Lake, Sensor to Shooter contract.
- Researched, analyzed, and implemented contemporary image compression technology and target recognition algorithms.
- Implemented system specific designs for video capture, compression, and transmission in three Raytheon specific programs. (Tactical Tomahawk, BDA Glider, and Urban Warrior UAV)
- Analyzed and interpreted data collected from visible, SAR, FLIR, and LADAR sensors.
- Demonstrated advanced technologies to customers during field and flight tests.
- Conducted technical reviews and seminars on engineering designs and concepts.
- Instrumental in the development of a VME based 24-processor Real-Time Launch-To-Impact simulation.
- Selected as the technical liaison to primary customer during initial delivery of the simulation system.
- Designed and developed a VME based system to provide real-time precision positioning and control of a camera-tracking mount.

9/92 - 5/94: **Junior Information Systems Engineer –**SAIC, Sierra Vista, Arizona
I leveraged position as a junior member of the technical staff to take full advantage of all training opportunities available. Worked diligently and effectively to become a key employee responsible for customer presentations demonstrating developed applications. Key accomplishments:

- Created MS Windows applications, graphical user interfaces, and multimedia presentations.
- Developed an interactive training program for the U.S. Army Network Systems Management utility.
- Provided statistical trend analysis of network traffic data.
- Prepared site evaluations for installation planning of Wide Area Networks.
- Made engineering recommendations based on building surveys and schematics.
- Supervised contractor installation and testing for fiber-optic wiring.

EDUCATION:

Master of Science in Management Information Systems, University of Arizona, expected December 2015.
Master of Science in Electrical Engineering, University of Southern California, May 2000.

Bachelor of Science in Electrical Engineering, University of Arizona, August 1992.

PUBLICATIONS:

- B. Walls, “Cascaded ATR”, Proc. SPIE, Vol. 7696, 2010.
- B. Walls, “Track Uncertainty Resolution through Confirmation of Identity using Correlation Filters,” Proc. SPIE, Vol. 7696, 2010.
- B. Walls, “3D Correlation Filters for Underwater Detection of Mines,” Proc. SPIE, Vol. 6677, 2008.
- B. Walls and A. Mahalanobis, "Performance of the MACH Filter and DCCF algorithms in the presence of data compression," Proc. SPIE, Vol. 3718, 1999.

HONORS AND AWARDS:

- **Nunamaker-Chen Doctoral Student Scholarship, Fall 2015** – Awarded to students for their hard work, determination and commitment to the MIS tradition, and particularly that of design science research.
- **Hughes/Raytheon Fellowship Program, Fall 1998** – Awarded to exceptional employees for their dedication to hard work, commitment to technical excellence, and desire to take on new challenges. Fellowship pays full tuition, books, and provides a stipend for employee to obtain an advanced technical degree.