THOMAS J. MARRINAN, PHD

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SUMMARY

Computational Scientist – I live at the intersection of Human-Centered and High Performance Computing, with interests in computer-supported cooperative work, human-computer interaction, visualization, and virtual reality. My research focuses on enhancing frameworks to better enable scientific analysis of large-scale data.

EDUCATION

University of Illinois at Chicago (UIC), Chicago, IL   2010 – 2016

Doctor of Philosophy – Computer Science
- Dissertation: "*Data-Intensive Remote Collaboration using Scalable Visualizations in Heterogeneous Display Spaces*" advised by Prof. Andrew E. Johnson

GPA – 3.91 / 4.00

Drake University, Des Moines, IA   2006 – 2010

Bachelor of Science – Computer Science
Bachelor of Arts – Graphic Design
GPA – 3.76 / 4.00

PROFESSIONAL EXPERIENCE

Argonne National Laboratory, Postdoctoral Appointee   2015 – current
- Developed flexible in-transit analysis code and computational steering methods to enable interactive supercomputing
- Collaborated with a team of Computer Scientists and Educational Professionals to create curriculum for a weeklong coding boot camp for high-school students
- Researched using multiple display technologies in conjunction with one another to enhance scientific discovery and data dissemination
- Mentored undergraduate students during summer internships

Electronic Visualization Laboratory (UIC), Research Assistant   2011 – 2015
- Developed SAGE2™, a democratic multi-user windowing environment for displaying and interacting with content on large ultra high-resolution displays
- Collaborated with a team of BioEngineers to developed high-performance computing and visualization applications suited for simulating and analyzing blood flow in the human cerebral vascular system
- Led demonstrations and laboratory tours for CS Open Houses, Chicago Ideas Week, prospective collaborators, and high school and middle school student groups

UIC, Teaching Assistant   2011 – 2012
- Gave lectures to classes of around 25 students
- Created project assignments and evaluated student written code
- Assisted professors teach courses in computer graphics and compiler construction

Accenture, Research Intern   2011
- Collaborated with a research team to identify and prevent SQL database deadlock
- Developed a database resource identifier to convert SQL transactions into Petri Net models

UIC, Course Grader   2010
- Evaluated student homework assignments and course examinations

Drake University, Research Assistant   2009 – 2010
- Developed a multi-dimensional data visualization tool that led to more efficient identification of chromatography systems used for modifying the selectivity of the separation in complex chemical mixtures
- Developed a tool for volumetric visualization of data from the Hubble Space Telescope in order to help astronomers understand the kinematics of ionized gas in the nuclear regions of Seyfert galaxies
- Presented weekly updates in front of a group of Professors and other Research Assistants

HONORS AND AWARDS

Best Paper – CollaborateCom   **2014**
- SAGE2: A New Approach for Data Intensive Collaboration Using Scalable Resolution Shared Displays
  IEEE International Conference on Collaborative Computing: Networking, Applications and Worksharing

Cover – Physics Today   **2013**
- My research on visualizing the human cerebral vascular system in the CAVE2™ Hybrid Reality System and I are depicted on the cover of the July 2013 issue of the *Physics Today* journal

NSF Highlighted Project   **2013**
- NSF named my research as one of its twelve highlighted projects for the year in its *Budget Request to Congress* with a short description about how our "State-of-the-Art Virtual Reality System is the Key to Medical Discovery"

Best Poster Honorable Mention – VisWeek   **2012**
- Whole-Brain Vascular Reconstruction, Simulation, and Visualization
  IEEE Scientific Visualization Conference

1st Place – UIC: the Images of Research   **2012**
- Artificially Created Cortical Functional Blood Unit
  UIC annual interdisciplinary exhibit competition that showcases the breadth and diversity of research

Outstanding Student in Computer Science – Drake University   **2010**
- Annual award given to the most outstanding computer science student
  Drake University College of Arts and Sciences Awards Ceremony

Outstanding Chapter President – Drake University   **2010**
- Annual award given to the most outstanding chapter president of a fraternity or sorority
  Drake University Greek Gala Awards

PUBLICATIONS

Conference Proceedings
- T. Marrinan, L. Renambot, J. Leigh, A. Forbes, S. Jones, and A. Johnson. Mixed Presence Collaboration using Scalable Visualizations in Heterogeneous Display Spaces. In *Proceedings of the 20th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (CSCW). 2017, to be published.
- T. Marrinan, A. Nishimoto, J. Insley, S. Rizzi, A. Johnson, and M. Papka. Interactive Multi-Modal Display Spaces for Visual Analysis. In *Proceedings of the 2016 ACM International Conference on Interactive Surfaces and Spaces* (ISS). 2016, to be published.
- T. Marrinan, L. Renambot, J. Leigh, A. Forbes, S. Jones, and A. Johnson. Synchronized Mixed Presence Data-Conferencing Using Large-Scale Shared Displays. In *Proceedings of the 2016 ACM International Conference on Interactive Surfaces and Spaces* (ISS). 2016, to be published.
- T. Marrinan, J. Aurisano, A. Nishimoto, K. Bharadwaj, V. Mateevitsi, L. Renambot, L. Long, A. Johnson, and J. Leigh. SAGE2: A New Approach for Data Intensive Collaboration Using Scalable Resolution Shared Displays. In *Proceedings of the IEEE International Conference on Collaborative Computing: Networking, Applications and Worksharing* (CollaborateCom). 2014, pp. 177-186.
- T. Marrinan and A. Linninger. In *Food, Pharmaceutical and Bioengineering Division 2013 - Core Programming Area at the 2013 AIChE Annual Meeting: Global Challenges for Engineering a Sustainable Future* (AIChE). 2013, pp. 706-708.
- T. Urness, T. Marrinan, A. Johnson, and M. Vitha. Multivariate Visualization of Chromatographic Systems. In *Proceedings of SPIE-IS&T Electronic Imaging*. 2011, vol. 7868.

Journal Articles
- L. Renambot, T. Marrinan, J. Aurisano, A. Nishimoto, V. Mateevitsi, K. Bharadwaj, L. Long, A. Johnson, M. Brown, and J. Leigh. SAGE2: A Collaboration Portal for Scalable Resolution Displays. In *Future Generation Computer Systems*. 2016, vol. 54, pp. 296-305.
- A. Linninger, I. Gould, T. Marrinan, C. Hsu, M. Chojecki, and A. Alaraj. Cerebral Microcirculation and Oxygen Tension in the Human Secondary Cortex. In *Annals of Biomedical Engineering*. 2013, vol. 41, no. 11, pp. 2264-2284.

- I. Gould, T. Marrinan, M. Chojecki, M. Qader, B. Henry, M. Pervais, N. Vaicaitis, Y. Zhu, A. Rogers, and A. Linninger. Hemodynamics of Cerebral Micro Vasculature. In *Computer Aided Chemical Engineering*. 2012, vol. 31, pp. 1727-1731.
- T. Marrinan, T. Urness, C. Nelson, K. Kreimeyer, and J. Mirocha. Understanding and Interpreting Multivalued Astronomical Data. In *IEEE Computer Graphics and Applications*. 2010, vol. 30, no. 5, pp. 12-17.
- A. Johnson, M. Vitha, T. Urness, and T. Marrinan. System Selectivity Cube: A 3D Visualization Tool for Comparing the Selectivity of Gas Chromatography, Supercritical-Fluid Chromatography, High-Pressure Liquid Chromatography, and Micellar Electrokinetic Capillary Chromatography Systems. In *Analytical Chemistry*. 2010, vol. 82, no. 14, pp. 6251-6258.

Poster Presentations
- T. Marrinan and M. Papka. Future Outlooks for Enabling Interactive Supercomputing Frameworks. In *Greater Chicago Area Systems Research* (GCASR). 2016.
- T. Marrinan, I. Gould, C. Hsu, and A. Linninger. Whole-Brain Vascular Reconstruction, Simulation, and Visualization. In *IEEE Scientific Visualization Conference* (VisWeek). 2012.

Thesis
- T. Marrinan. Data-Intensive Remote Collaboration using Scalable Visualizations in Heterogeneous Display Spaces. *PhD Thesis, University of Illinois at Chicago*. 2016.

PROFESSIONAL ACTIVITIES

Unpublished Talks
- Scalable Adaptive Graphics Environment (SAGE) for Global Collaboration. In *Birds of a Feather (BoF) presentation at Supercomputing*. 2014.
- SAGE2. In VISTech Workshop at Supercomputing. 2014.

Coding Boot Camp
- Collaborated with a team of Computer Scientists and Educational Professionals at Argonne National Laboratory to create curriculum for a weeklong coding boot camp for high-school students
- Gave lectures to 26 high-school students
- Provided one-on-one assistance to students who had questions or required extra assistance

Conferences Attended
- Computer-Supported Cooperative Work & Social Computing (CSCW). Upcoming 2017
- Interactive Surfaces and Spaces (ISS). Upcoming 2016
- Greater Chicago Area Systems Research (GCASR). 2016
- High Performance Computing, Networking, Storage, and Analysis (SC). 2014, 2015
- VisWeek / Vis. 2012, 2015
- Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom). 2014

Grant Writing Experience
- NIH R21 (not funded). Stereoscopic 4D Modeling and Interactive Virtual Exploration of Cerebral Vasculature. Impact/Priority Score: 28, Percentile: top 19%, Funding Rate: top 14%.

TECHNICAL SKILLS

Programming Languages
- C
- C++
- Python
- Java
- HTML
- CSS
- JavaScript

Parallel Programming Models
- MPI
- Pthreads

Image / Video Generation and Editing

- Adobe Creative Suite
- ImageMagick
- FFmpeg
- iMovie
- Final Cut Pro
- Blender

PROFESSIONAL MEMBERSHIPS

Association for Computing Machinery (ACM)

EXTRACURRICULAR ACTIVITIES

Volunteer Work

- A Night Out – supervised events for domestic violence victims and their children
- Huntsman Cancer Institute – organized and participated in fundraising activities
- Children's Miracle Network – organized and participated in fundraising activities

Recreational Sports

- Flag Football, Beach Volleyball, SCUBA Diving