

# S. SETH LONG

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Current as of Fall 2023

<https://isoptera.lcsc.edu/seth>

sslong@lcsc.edu



## Research Interests

Computational Neuroscience, Artificial Intelligence, Machine Learning, Graphics Processors, Bioinformatics

## Education

- Ph.D (2014) in Computer Science, at Washington State University. Thesis entitled *Using Graphs to Discover Correlations in MR Images of the Human Brain*. Thesis adviser: Dr. Larry Holder
- M.S. (2007) in Computer Science, at Western Washington University. Project *Access Control Lists as a Filesystem Overlay*. Adviser: Dr. Philip Nelson
- B.S. (2005) in Computer Science, at Western Washington University.
- AAUCT (2002), at Skagit Valley College

## Professional Experience

- August 2019 – Present: Associate Professor, Lewis-Clark State College
- August 2014 – July 2019: Assistant Professor, Lewis-Clark State College Division of Natural Science and Mathematics
- August 2013 – May 2014: Adjunct Faculty, Lewis-Clark State College Division of Natural Science and Mathematics
- August 2013 – May 2014: Lecturer, School of Electrical Engineering and Computer Science, Washington State University
- January 2010 – May 2010: Lecturer, School of Electrical Engineering and Computer Science, Washington State University
- September 2007 – June 2009: Lecturer, Department of Computer Science, Western Washington University
- Summer 2008: Adjunct Faculty, Whatcom Community College
- September 2005 – June 2006, January 2007 – March 2007: Teaching Assistant, Department of Computer Science, Western Washington University
- June 2006 – December 2006: Software Development Intern, Logos Bible Software
- October 2004 – February 2005: Software Development Intern, Attachmate Corporation

## Awards

- *Outstanding Ph.D Student in Computer Science*, Washington State University School of Electrical Engineering and Computer Science, April 2012
- *NSF IGERT Fellowship August 2010 – December 2012*, Integrative Training in Health-Assistive Smart Environments, Washington State University
- *Best Programmed Robot*, Western Washington University Robotics Competition, Spring 2006
- *First Place*, Western Washington University ACM Programming Competition, Spring 2005
- *Computer Science Alumni and Friends Scholarship*, Fall 2003

## Publications

- Augustus N. Tropea, Janey L. Valerio, Michael J. Camerino, Josh Hix, Emmalee Pecor, Peter G. Fuerst, and S. Seth Long. "Computer Assisted Segmentation Tool: A Machine Learning Based Image Segmenting Tool for TrakEM2." *In International Symposium on Bioinformatics Research and Applications*, pp. 246-257. Springer, Cham, 2017.
- Shuai Li, Joe Mitchell, Deidrie J. Briggs, Jamie K. Young, Samuel S. Long, and Peter G. Fuerst, "Morphological Diversity of the Rod Spherule: A Study of Serially REconstructed Electron Micrographs". *PloS one* 11, no. 3 (2016): e0150024
- Shuai Li, Michael Woodfin, S. Seth Long, and Peter G Fuerst, "IPLaminator: an ImageJ plugin for automated binning and quantification of retinal lamination". *BMC Bioinformatics*, January 2016
- Long, Samuel Seth, "Graph-Based Neural Image Analysis and Classification", *Washington State University (Ph.D Thesis)*, 2014.

- G. Andrade, S. Long, H. Fleming, W. Li, and P. Fuerst, "Dscam localization and function at the mouse cone synapse". *Journal of Comparative Neurology*, 2014.
- Seth Long and Lawrence Holder, "Discovery of Discriminating Neural Regions for MRI Classification," *Workshops at the Twenty-Seventh AAAI Conference on Artificial Intelligence*, July 2013.
- Seth Long and Lawrence Holder, "Graph-Based MRI Brain Scan Classification and Correlation Discovery," *IEEE Symposium on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB)*, May 2012.
- Seth Long and Lawrence Holder, "Graph-Based Shape Analysis for MRI Classification," *International Journal of Knowledge Discovery in Bioinformatics*, 2(2):19-33, 2011.
- Seth Long and Lawrence Holder, "Graph-Based Classification of MRI Data Based on the Ventricular System," *Workshop on Biological Data Mining and its Applications in Healthcare (BioDM) at the IEEE International Conference on Data Mining (ICDM)*, December 2011.
- Seth Long and Lawrence Holder, "Using Graphs to Improve Activity Prediction in Smart Environments based on Motion Sensor Data," *International Conference on Smart Homes and Health Telematics (ICOST)*, June 2011.

## Research Support

May 2021 to May 2023: INBRE Supplement \$60,000 in direct costs at LCSC

- Quantitative image analysis to determine the function of selected microglia-expressed genes in retinal development and regeneration (current)

- May 2019 to May 2021: INBRE Pilot Project (As Principle Investigator) \$98,972 in direct costs Bioinformatics on the GeForce RTX GPU

May 2015 to May 2017: INBRE Pilot Project (As Principle Investigator) \$127,929 in direct costs

- INBRE funded development of IPLaminator, the Color Segmentation Tool, and the Computer-Aided Segmentation Tool. This provided 3 undergraduates with significant research experience, all of which are named authors on published works.

July 2016: IGEM Bioinformatics Lab (As Principle Investigator) \$75,000

- IGEM funded development of a bioinformatics lab at LCSC. This provided 25 image processing workstations with 128 GB of memory each, to support both image processing and genetics research.

August 2010 - December 2012: IGERT (Integrative Graduate Education and Research Traineeship) fellowship

- (\$72,500 stipend plus benefits)

This grant supported development of the Graph Neural Analyzer, in publications listed above.

## Teaching

- Special Topics: Game Engine Design (LCSC)
- Special Topics: Bioinformatics (LCSC)
- Special Topics: GPU Programming (LCSC)
- Networking 1 (LCSC)
- Networking 2 (LCSC)
- Cyber Ethics (LCSC)
- Biological Image Analysis (LCSC)
- Artificial Intelligence (LCSC)
- Network Programming (LCSC)
- Secure Software Development (LCSC)
- Computer Architecture (LCSC)
- Operating Systems (LCSC)
- Linux and Tools (LCSC)
- Advanced Data Structures (WSU, LCSC)
- Programming Languages (WSU)
- Beginning Programming in Python, C, C#, Ada95, and Java (WWU, WCC, LCSC)
- Ethics of Computing (WWU)
- Personal Computer Systems (WWU)
- Introduction to Robotics (WWU)
- Beginning Game Design (WWU)
- Computer Science 101 (WWU)