DIANE VILLAROMAN

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Qualifications Summary

- 2 years work experience of full-stack software application pipeline:
  - Efficiently plan and design with clients and collaborators
  - Program VR/AR experiences with C# Unity or web applications with HTML and Javascript
  - Analyze research results via Mathworks Matlab, Microsoft Office Suite, and others
  - Troubleshoot methods and review feedback
  - Communicate results via oral presentations and discussions

Work Experience

Research Associate and Software Engineer for Neuroscience/Psychiatry Laboratory of Neuromodulation & Neuroimaging, UCLA — Dec. 2016 - Present

- Collaborate with neuroscientists, neurosurgeons, and psychiatrists to design, create, and execute VR and other virtual experiences to research the neural correlates of spatial navigation memory

Data Scientist Apprentice and Software Engineer for Neurosurgery Machine Learning Lab, UCLA — Dec. 2015 - Present

- Collaborate with neurosurgeons and other engineers to create and organize medical image databases to generate machine learning segmentation models and execute them on the web and for educational virtual experiences in the clinic

Software Engineer

- Engineer network systems between a mobile phone and desktop computer.
  - Using OptiTrack cameras and NatNet SDK, allow for an unwired, real-time motion tracked VR experience
  - Using the Unity UNet library mirrors an unwired VR experience to a desktop for multi-player apps
- Program virtual interactive experiences on multiple platforms (VR, AR, desktop, tablet)
  - Create educational tools for medical related topics
  - Output accurate patient behavior and study its relationship to EEG and ECoG data
  - Integrate a variety of controllers into VR experiences including bluetooth controllers and USB joysticks
- Implement SDKs into Unity for more immersive experiences, such as eye tracking and Occipital's Structure Sensor
- Design, secure and manage web applications using HTML/CSS/JS, Wordpress, and Golang
- Proficient in C++, bash, Python and specific libraries including those for computer vision and machine learning

Lead Visual Artist

- Create and execute semi-automated methods to generate 3D models of medical images
- Animate with Autodesk Maya, designing a library of medical pathologies and human gestures from motion capture
- Utilize blend shape technique in Maya and Unity to create deformable human bodies for a body perception research project
- Design and build virtual environments on my own or with collaborators and optimizing lighting, texture, and other aspects
- Film and edit 360 experiences using the 360 Fly and Ricoh Theta camera

Research Associate

- Lead planning meetings with clients and collaborators to fully materialize their vision
- Run medical imaging scans and analysis using fsl
- Write and execute Matlab analysis for signal processing of electrophysiology and their relationship to behavioral data
- Document and organize all protocols for reproducibility
- Create large data sets of patient information to generate machine learning models while protecting patient privacy
- Write IRB, grants, journals, abstracts, and presentations with effective communication
- Train new team members

Education

University of California, Los Angeles, College of Letters and Science — June 2016
Bachelor of Science in Neuroscience

Journal and Conference Publications

Aghajan, Z et al. "Theta dynamics in the human medial temporal lobe during freely moving spatial navigation". Neural Microcircuits Training Program Symposium & International Conference on Learning & Memory. 2018.

Villaroman, D et al. "Medical Consultation of Spinal Pathologies with Kinematics in Virtual Reality". Global Spine Congress. 2018.

Villaroman, D et al. "A Kinematic Model of Spinal Anatomy in Virtual Reality for Patient and Physician Education". AANS. 2017.

Gaonkar, B et al. "Multi-Parameter Ensemble Learning for Automated Vertebral Body Segmentation in Heterogeneously Acquired Clinical MR Images". IEEE J Transl Eng Heal Med. 2017.