Clinton J. Wang

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Webpage | Github | Google Scholar

Research Interests: generative models, computer vision, multimodal learning, interpretability

Education

Massachusetts Institute of Technology, Cambridge MA 2018–present
Ph.D. candidate in Electrical Engineering and Computer Science, GPA: 5.0/5.0

Yale University, New Haven CT 2011–2015
B.S. in Biomedical Engineering, GPA: 3.9/4.0 (Magna Cum Laude)

Publications

Journal Articles

- **Wang, C.J.***, Hamm, C.A.*, Savic, L.J. et al. "Deep learning for liver tumor diagnosis part II: interpretable deep learning to characterize tumor features." *European Radiology* (2019). [Paper]
- Hamm, C.A.*, **Wang, C.J.***, Savic, L.J. et al. "Deep learning for liver tumor diagnosis part I: development of a convolutional neural network classifier for multi-phasic MRI." *European Radiology* (2019). [Paper]
- Letzen, B., **Wang, C.J.**, Chapiro J. "The Role of Artificial Intelligence in Interventional Oncology: A Primer." *Journal of Vascular and Interventional Radiology* (2019). [Paper]
- **Wang, C.**, Schwan J., Campbell S.G. "Slowing of contractile kinetics by myosin-binding protein C can be explained by its cooperative binding to the thin filament." *Journal of Molecular and Cellular Cardiology* (2016). [Paper]

Conferences

- **Wang, C.J.**, Hamm C.A., Letzen, B.S., James S. Duncan, "A probabilistic approach for interpretable deep learning in liver cancer diagnosis," SPIE Medical Imaging Conference (2019). [Paper] [Talk]

Under Review

- Stark, S., **Wang, C.J.**, Savic, L.J. et al. "Automated Feature Quantification of Lipiodol as an Imaging Biomarker to Predict Therapeutic Efficacy of Conventional Transarterial Chemoembolization of Liver Cancer." Submitted October 16, 2019.

Awards

- Siebel Foundation Scholar (2019)
- Department of Biomedical Engineering Prize (2015)
- Tau Beta Pi Engineering Honor Society (2015)

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Experience

MIT Computer Science and Artificial Intelligence Laboratory 2018–present

Supervised by Polina Golland

- Develop a generative adversarial network that performs multi-attribute, continuous-domain image-to-image translation in a manner invariant to the path traversed in the space of conditioned attributes.
- Differentiate stroke patient phenotypes and predict atrophy trajectories of patients with Alzheimer's disease using generative models on brain MRIs.
- Collaborate with neurologists at Massachusetts General Hospital to describe patterns of white matter hyperintensities and their effect on stroke severity and recovery.

Yale Radiology Research Lab 2017–2018

Supervised by Jim Duncan

- Outperformed radiologists in classification of hepatic lesions on MRI using convolutional neural networks, while providing textual evidence via probabilistic modeling as well as interpretability via saliency maps.
- Developed image analysis algorithms including automated tumor segmentation and prediction of Lipiodol deposition patterns in liver MRIs.
- Collaborated with radiologists at Yale New Haven Hospital to characterize relationships between MRI data, clinical covariates and treatment response in liver cancer patients.
- Built applications to automate data retrieval and handling from Yale New Haven Hospital medical image archive and research platform.

Analytics & Technology Consultant 2015–2017

PwC (New York)

- Developed LSTMs for sentiment analysis, keyword extraction and topic classification on social media text using semi-supervised learning.
- Designed business logic and SQL code for cleansing, matching and merging customer data for a major airline.

Yale School of Engineering & Applied Science 2014–2016

Supervised by Stuart Campbell

- Created multi-scale computational model of heart muscle contraction using interacting Markov models, fitted with particle swarm optimization.
- Characterized function and dynamics of cMyBP-C protein in cardiac muscle using the above model, helping to explain the link between its mutations and cardiac hypertrophy.

Yale School of Engineering & Applied Science 2013

Supervised by Hal Blumenfeld

- Characterized propagation of partial seizures through the brain via time series and Fourier analysis of EEGs. Used principal component analysis to create dynamic model of seizure activity.

Other

- Graduate Student Advisory Group for Engineering, MIT (2019–present)
- Controller, Sidney-Pacific Graduate Residence (2019–present)
- **Music composition**: Honorable Mention (2012) and finalist (2013) at ASCAP Morton Gould Young Composer Awards (classical music)
- **Graphic design**:
  - 2nd place, ACA Infographic Contest, Yale Institution for Social and Policy Studies (2013)
  - Production & Design Editor, Yale Daily News (2012–2013)
  - Production & Design Team, Yale Daily News (2011–2012)
- **Languages**: Mandarin (advanced), German (basic), French (basic)