GIA H NGO

Electrical and Computer Engineering
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EDUCATION

Cornell University 2018 - 2022
Ph.D. in Electrical and Computer Engineering, Minor in Artificial Intelligence
Advisor: Mert R. Sabuncu
MICCAI Young Scientist Award

National University of Singapore 2011 – 2015
B.Eng in Electrical Engineering (First Class Honors)
Minor in Technology Innovations & Entrepreneurship, Tel Aviv University

RESEARCH INTERESTS

Machine learning, Neuroscience, Natural Language Processing, Mental Disorders, Big Data

PUBLICATIONS (SELECTED)

Full publication list available in Appendix or Google Scholar

1. GH Ngo et al. (2022) Predicting individual task contrasts from resting-state functional connectivity using a surface-based convolutional network. NeuroImage, 248:118849 [paper][code]
2. GH Ngo & M Nguyen et al. (2021) Text2Brain: Synthesis of Brain Activation Maps from Free-Form Text Query. InInternational Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI), 605-614 [paper][code]. **Best Paper Winner: MICCAI Young Scientist Award**
3. M Khosla, GH Ngo, K Jamison, A Kuceyeski, MR Sabuncu (2020) Neural encoding with visual attention. Advances in Neural Information Processing Systems, 33:15942-53 [paper]. **Oral Presentation**
4. GH Ngo et al. (2019) Beyond consensus: Embracing heterogeneity in curated neuroimaging meta-analysis [paper][code]
5. GH Ngo et al. (2019) Phonology-augmented statistical framework for machine transliteration using limited linguistic resources. IEEE/ACM Transactions on Audio, Speech, and Language Processing [paper][code]

AWARDS (SELECTED)

Best Paper Winner: MICCAI Young Scientist Award	2021
Jacobs Scholar Fellowship for PhD study	2018
Best Paper Finalist: INTERSPEECH Conference	2014
ASEAN Scholarship: Full Undergrad Funding at NUS	2011 - 2015
A*STAR Scholarship: Full Secondary and Junior College Funding	2007 - 2010

EMPLOYMENT HISTORY

Applied Scientist Intern 2021
Amazon Alexa

- Improve Alexa's Natural Language Understanding module in handling complicated queries.

Engineering Lead 2014 - 2018
GIVE.asia

- Build the MVP of an online crowd-funding platform for social causes in Asia with Ruby on Rails + AngularJS + MongoDB
- Migrate the software stack to Scala + VueJS + PostgreSQL to handle increased traffic, concurrent transactions, and stable development environment
- Conduct A/B test on the key UI flows to optimize profit margin per transaction

Research Engineer, Clinical Imaging Research Center 2016 - 2017
National University of Singapore

- Develop inference algorithms for unsupervised estimation of brain atlases
- Develop new methods to discover cognitive processes affected by psychological disorders

Software Engineer Intern 2014
Project Ray

- Prototype a mobile application for the visually handicapped to localize their positions
- Build a MVP webpage for crowd-sourcing accessibility information of public places

Research Assistant 2013 - 2015
Institute for Infocomm Research, Singapore

- Develop transliteration algorithms augmented with phonology for low-resource languages such as Vietnamese, Cantonese
- Exploit hierarchical structure of logographic characters for better representational learning

PUBLIC SOFTWARE

All software available on Github.

- BrainSurfCNN: surface-based neural network for predicting individual task contrasts from resting-state functional connectivity [code]
- Text2Brain: neural network for synthesizing brain maps from free-from text query [code]
- Author-Topic model for coordinate-based neuroimaging meta-analysis [code]
- Phonology-augmented statistical framework for machine transliteration [code]
- Minimal WYSIWYG editor that supports simple, unnested JSON outputs [code]
- U-Net based on ResNet34 for localizing lung opacities from chest X-Ray [code]
- Photometric stereo to estimate an object's depth map based on pixel brightness [code]

TEACHING & PROFESSIONAL SERVICES

Teaching Assistant for Computer Vision (ECE5470) graduate class at Cornell 2021
Reviewer for NeuroImage, MICCAI, Medical Image Analysis

TALKS

MIT, Voxel Talk — Mar 2022
Accurate Prediction of Individual Task Contrasts from Resting-state Functional Connectivity — Cambridge, MA

INRIA, Parietal Team — Dec 2021
Text2Brain: Synthesis of Brain Activation Maps from Free-Form Text Query — Paris, France

Massachusetts General Hospital, Smoller Lab — Nov 2021
Synthesis of Brain Maps using Deep Learning — Boston, MA

Stanford, Computational Neuroimage Science Laboratory — Nov 2021
Text2Brain: Synthesis of Brain Activation Maps from Free-Form Text Query — Stanford, CA

Stanford, CS523 Research Seminar in Computer Vision and Healthcare — Apr 2021
Towards holistic encoding models for predicting fMRI responses to multimodal naturalistic stimuli — Cambridge, MA

OHBM, Symposium — Jun 2017
Coordinate-Based Meta-analysis: From Consensus to Discovery Science — Vancouver, Canada

APPENDIX: PUBLICATION LIST

Source: https://scholar.google.com/citations?user=iKBqU_IAAAAJ&hl=en

JOURNALS

1. GH Ngo, M Nguyen, K Jamison, A Kuceyeski, MR Sabuncu (2022) Predicting individual task contrasts from resting-state functional connectivity using a surface-based convolutional network. NeuroImage, 248:118849
2. M Khosla, GH Ngo, K Jamison, A Kuceyeski, MR Sabuncu (2021). Cortical response to naturalistic stimuli is largely predictable with deep neural networks. Science Advances, 7:eabe7547
3. M Khosla, K Jamison, GH Ngo, A Kuceyeski, MR Sabuncu (2019). Machine learning in resting-state fMRI analysis. Magnetic resonance imaging, 64:101-121
4. GH Ngo, SB Eickhoff, M Nguyen, G Sevinc, PT Fox, RN Spreng & BTT Yeo (2019) Beyond consensus: Embracing heterogeneity in curated neuroimaging meta-analysis. NeuroImage, 200:142-158
5. GH Ngo, NF Chen, M Nguyen, B Ma, H Li (2019). Phonology-augmented statistical framework for machine transliteration using limited linguistic resources. IEEE/ACM Transactions on Audio, Speech, and Language Processing, 27: 199-211
6. M Nguyen, GH Ngo, NF Chen (2019) Hierarchical character embeddings: Learning phonological and semantic representations in languages of logographic origin using recursive neural networks. IEEE/ACM Transactions on Audio, Speech, and Language Processing, 28:461-473
7. J Wu, GH Ngo, D Greve, J Li, T He, B Fischl, SB Eickhoff, BTT Yeo (2018) Accurate nonlinear mapping between MNI volumetric and FreeSurfer surface coordinate systems. Human Brain Mapping, 39:3793-3808

FULL LENGTH REFEREED CONFERENCE PAPERS

1. GH Ngo, M Nguyen, NF Chen, MR Sabuncu (2021) Text2Brain: Synthesis of Brain Activation Maps from Free-Form Text Query. International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI), 605-614 (Best Paper Winner: MICCAI Young Scientist Award)
2. M Nguyen, GH Ngo, NF Chen (2021) Domain-Shift Conditioning Using Adaptable Filtering Via Hierarchical Embeddings for Robust Chinese Spell Check. IEEE/ACM Transactions on Audio, Speech, and Language Processing, 29:2027-2036
3. GH Ngo, M Khosla, K Jamison, A Kuceyeski, MR Sabuncu (2020) From connectomic to task-evoked fingerprints: Individualized prediction of task contrasts from resting-state functional connectivity. MICCAI, 62-71 (Oral)
4. M Khosla, GH Ngo, K Jamison, A Kuceyeski, MR Sabuncu (2020) Neural encoding with visual attention. Advances in Neural Information Processing Systems, 33:15942-53 (Oral)
5. M Khosla, GH Ngo, K Jamison, A Kuceyeski, MR Sabuncu (2020) A shared neural encoding model for the prediction of subject-specific fMRI response. MICCAI, 539-548
6. M Nguyen, GH Ngo, NF Chen (2018) Multimodal neural pronunciation modeling for spoken languages with logographic origin. Proceedings of Empirical Methods in Natural Language Processing (EMNLP)

7. M Nguyen, GH Ngo, NF Chen (2019) Isolating the Effects of Modeling Recursive Structures: A Case Study in Pronunciation Prediction of Chinese Characters. In Proc 2019 Workshop on Widening NLP, 95-97
8. S Singhania, M Nguyen, GH Ngo, Chen NF (2018) Statistical machine transliteration baselines for news 2018. In Proc Seventh Named Entities Workshop 2018, 74-78
9. GH Ngo, SB Eickhoff, PT Fox, BTT Yeo (2016) Collapsed variational bayesian inference of the author-topic model: application to large-scale coordinate-based meta-analysis. In Proc Int Workshop on Pattern Recognition in Neuroimaging (PRNI) (Oral)
10. M Nguyen, GH Ngo, Chen NF (2016) Regulating orthography-phonology relationship for English to Thai transliteration. In Proc Sixth Named Entity Workshop, 2016:83-87
11. GH Ngo, NF Chen, M Nguyen, B Ma, H Li (2015) Phonology-augmented statistical transliteration for low-resource languages. In Sixteenth Annual Conference of the International Speech Communication Association (INTERSPEECH) (Best Paper Finalist).
12. GH Ngo, NF Chen, S Sivadas, B Ma, H Li (2014) A Minimal-Resource Transliteration Framework for Vietnamese. INTERSPEECH
13. NF Chen NF, S Sivadas, BP Lim, GH Ngo, H Xu, B Ma, H Li (2014) Strategies for Vietnamese keyword search. InProc IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 4121-4125)