CAT P. LE

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EDUCATION

Duke University   Durham, NC

Ph.D., Electrical and Computer Engineering   Expected May 2023

Research: *Machine Learning, Computer Vision*

GDP: 3.94

Advisor: Dr. Vahid Tarokh

California Institute of Technology   Pasadena, CA

M.S., Electrical Engineering   June 2017

GDP: 4.00

Advisor: Dr. Babak Hassibi

Rutgers University – New Brunswick   New Brunswick, NJ

B.S., Electrical and Computer Engineering   May 2016

GDP: 4.00

List honors: *summa cum laude, Matthew Leydt Award, John B. Smith Award, Outstanding Engineering Scholar, E. M. Toomey Scholarship, Tau Beta Pi, Eta Kappa Nu*

RESEARCH EXPERIENCE

Duke University   Durham, NC

Graduate Research Assistant   August 2018 – Present

- Define task affinity based on Fisher Information matrices and maximum bipartite matching algorithm.
- The task affinity indicates the complexity of transfering the knowledge of a task to another. It is non-commutative and invariant to label permutation.
- The applications of the task affinity include neural architecture search, transfer learning, few-shot learning, multi-task learning, etc.

California Institute of Technology   Pasadena, CA

Graduate Research Assistant   September 2016 – June 2017

- The JPL Sleeve is used to read the signal from 20 muscles on the human's hand and map it into alphabet.
- Real-time musical note detector (FPGA, FFT) that helps users learn music by ear and play it flawlessly.

Rutgers University   New Brunswick, NJ

Undergraduate Research Assistant   August 2015 – May 2016

- Researched on Radio Access Network under REU Funding Program of National Science Foundation (NSF).

- Simulated three OpenAirInterface base stations (USRP B210) allocate their resources for users' demand.
- Analyzed the performance of data transmitted between base station (eNB) and users (UEs).

WINLAB   North Brunswick, NJ
Undergraduate Research Assistant   May 2015 – August 2015
- Research on Wi-Fi, LTE, and LTE in Unlicensed Spectrum (LTE-U).
- Simulated the LTE's eNB/UE by USRP B210 in ORBIT Lab using OMF, OpenAirInterface repositories.
- Analyzed the transmitted data based on Spectrum plot, Waterfall plot, Constellation plot for varying bandwidths.

PROFESSIONAL EXPERIENCE

Motorola Solutions   Dallas, TX
System Engineer   June 2017 – August 2018
- Hardware Development. Firmware Development. Camera Systems Synchronization and LED Strobing.
- Optical Character Recognition Algorithm for license plate recognition and facial recognition camera.

PUBLICATIONS

- C. P. Le, J. Dong, M. Soltani, and V. Tarokh, "Task affinity with maximum bipartite matching in few-shot learning," in International Conference on Learning Representations, 2022. [Online].
- Le, C.P., Soltani, M., Dong, J., & Tarokh, V. (2021). Fisher Task Distance and Its Applications in Neural Architecture Search and Transfer Learning. IEEE Preprint IEEE Access 2022.
- Le, C. P., Soltani, M., Ravier, R., & Tarokh, V. (2021, June). Task-aware neural architecture search. In ICASSP 2021-2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (pp. 4090-4094). IEEE.
- Le, C. P., Soltani, M., Ravier, R., & Tarokh, V. (2021). Neural Architecture Search From Task Similarity Measure. arXiv preprint arXiv:2103.00241.
- Le, C. P., Zhou, Y., Ding, J., & Tarokh, V. (2020, May). Supervised Encoding for Discrete Representation Learning. In ICASSP 2020-2020 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (pp. 3447-3451). IEEE.

HONORS & AWARDS

Nikola Tesla Scholar (Columbia University)	2016
Matthew Leydt Award (Rutgers University)	2016
John B. Smith Award (Rutgers University)	2016
Outstanding Engineering Scholar (Rutgers University)	2016
E. M. Toomey Scholarship (Rutgers University)	2015

TEACHING EXPERIENCE

Duke University   Durham, NC

Teaching Assistant   August 2019 – Present

- ECE 590. Introduction to Deep Learning
- ECE 681. Pattern Classification and Recognition Technology

California Institute of Technology   Pasadena, CA

Teaching Assistant   September 2016 – December 2017

- Instructed the lab section for groups of 4-6 students. The lab sections include fabricating LED, Schottky Diode, MOS Capacitor, P-N Diode, Field Effect Transistor, Bipolar Junction Transistor, Photovoltaic Cell, Microfluidics, Laser Diode.
- APh/EE 9. Solid-State Electronics for Integrated Circuits

Rutgers University   New Brunswick, NJ

Teaching Assistant   September 2016 – December 2017

- Provided professional groups lessons to strengthen students' knowledge in Digital Signal Processing. Provided in-class activities and discuss sections.
- 14:332:346 Digital Signal Processing

SKILLS

- Programming Language:
  - Python (Proficient) – Numpy, Scipy, Pandas, Beautiful Soap, Matplotlib, Seaborn, Plotly, Scikit-learn, Tensorflow, Keras
  - Matlab (Proficient), C/C++ (Familiar), OpenCV, LabVIEW
- Operating System: macOS/Linux/Windows
- Front-End Web Development: HTML, CSS
- Other: Latex, Git, Excel, Word, PowerPoint

PROFESSIONAL AFFILIATIONS AND HONOR SOCIETIES

The Institute of Electrical and Electronics Engineers (IEEE)	2018 - Present
IEEE – Signal Processing Society	2020 - Present
Tau Beta Pi	2015 – Present
Eta Kappa Nu	2015 – Present
Sigma Alpha Pi	2016 – Present
Caltech Y	2016 – 2017

REFERENCES

- Prof. Vahid Tarokh (vahid.tarokh@duke.edu)
  Professor, Duke University
- Prof. Yicheng Lu (ylu@ece.rutgers.edu)
  Distinguished Professor, Rutgers University
- Prof. Babak Hassibi (hassibi@caltech.edu)
  Professor, California Institute of Technology