Qi Li

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Biography: Dr. Qi Li is an Assistant Professor of Computer Science at Fisk University, specializing in deep learning, generative models and the robustness of neural networks. His research integrates computer vision, motion analysis, and interdisciplinary applications in healthcare, including the development of novel datasets and AI-driven analytical tools. Dr. Li's scholarly contributions have been recognized at premier venues such as CVPR and ACCV, where he received the Huawei Best Application Paper Honorable Mention in 2020. An experienced educator, Dr. Li has designed and taught a wide range of courses, from introductory computing to advanced NLP and theory of computation. His technical expertise includes Python, PyTorch, CUDA, and distributed computing, with a strong track record in data visualization, curriculum development, and interdisciplinary collaboration.

EDUCATION

Auburn University, Auburn, AL — Sep 2020 - Aug 2024
Ph.D. in Computer Science — Deep Learning — Advisor: Wei-Shinn (Jeff) Ku, Anh Nguyen
GPA: 3.86/4.0

Auburn University, Auburn, AL — Aug 2017 - May 2020
M.S. in Computer Science and Software Engineering — Advisor: Anh Nguyen
GPA: 4.0/4.0

Southeast University, Nanjing, China — Sep 2002 - Jun 2006
B.S. in Computer Science and Software Engineering

PUBLICATIONS

https://scholar.google.com/citations?user=wbv5apcAAAAJ

Research papers

- Bao, Y., Zhang, Z., Arifuzzaman, M., Le, T. D., **Li, Q.**, Mwanza, M., ... & Ye, J. (2025) Developing Effective Techniques for the Recognition of Shanghai Dialect Text. (IEEE Access) [pdf]
- Bao, Y., Huang, I., **Li, Q.**, Zhang, Z., Xing, Y., Hou, D., & Ye, J (2025) A Framework for Modeling County-Level COVID-19 Transmission. (Frontiers in Public Health) [pdf]
- **Li, Q.**, Chiu T. C., Huang H. W., Sun M. T., Ku W. S. (2024) VideoBadminton: A Video Dataset for Badminton Action Recognition. (BigData) [pdf]
- Wang, K. C., Zhang, J., Huang, J., **Li, Q.**, Sun, M. T., Sakai, K., & Ku, W. S. (2023). CA-Wav2Lip: Coordinate Attention-based Speech To Lip Synthesis In The Wild.(SMARTCOMP) [pdf]
- Chen, P., **Li, Q.**, Biaz, S., Bui, T., Nguyen, A. (2022). gScoreCAM: What objects is CLIP looking at? Asia Conference on Computer Vision (ACCV). **Oral presentation** (acceptance rate: 41/836 ≈ 4.9%) [pdf] [code] [video]
- **Li, Q.**, Mai, L., Alcorn, M. A., Nguyen, A. (2020). A cost-effective method for improving and re-purposing large, pre-trained GANs by fine-tuning their class-embeddings. Asia Conference on Computer Vision (ACCV). **Huawei Best Application Paper Honorable Mention** (acceptance rate: 6/768 ≈ 0.8%) [pdf] [code]
- **Li, Q.**, Mai, L. Nguyen, A. (2019). Improving sample diversity of a pre-trained, class-conditional GAN by changing its class embeddings. [pdf]
- Alcorn, M. A., **Li, Q.**, Gong, Z., Wang, C., Mai, L., Ku, W. S., Nguyen, A. (2019). Strike (with) a Pose: Neural Networks Are Easily Fooled by Strange Poses of Familiar Objects. *Computer Vision and Pattern Recognition (CVPR).* (acceptance rate: $1,294/5,160 = 25.2\%$) [pdf] [code]

Under Review

· **Li, Q.**, Nichols, C., Welner, R. S., Chen, J. Y., Ku, W. S., & Yue, Z. (2024). Toden-E: Topology-Based and Density-Based Ensembled Clustering for the Development of Super-PAG in Functional Genomics using PAG Network and LLM. [pdf]

WORK EXPERIENCE

Fisk University Aug 2024 - present
Assistant Professor *Nashville, TN*

· **Introduction to Computing (CSCI 100)**:
· Designed and delivered lectures covering foundational computing concepts, including productivity software, introductory programming, and digital literacy.
· Guided students through hands-on activities with Microsoft Office, Google Workspace, and introductory Python programming.
· Developed assignments and in-class exercises to foster problem-solving skills and technological proficiency.
· **Theory of Computation (CSCI 291)**:
· Taught fundamental concepts of automata theory, formal languages, and computational complexity.
· Created problem sets and assessments to evaluate student understanding of theoretical frameworks.
· **Natural Language Processing & Applications (CSCI 390NLP)**:
· Developed curriculum introducing NLP fundamentals, including text preprocessing, language modeling, and machine learning applications.
· Led project-based learning experiences where students applied NLP techniques to real-world datasets.
· Integrated research insights into lectures, exposing students to cutting-edge developments in the field.
· **Programming Languages (CSCI 282)**:
· Instructed students on the principles, paradigms, and design of programming languages.
· Guided comparative analysis of programming languages, emphasizing syntax, semantics, and runtime behavior.
· Designed lab exercises to reinforce concepts through hands-on coding in multiple languages.

Auburn University Aug 2018 - present
Teaching Assistant *Auburn, AL*

· **Formal Language (COMP 4200)**:
· Graded assignments and provided constructive feedback to improve student understanding.
· Conducted supplementary tutorial sessions and addressed individual student queries.
· Assisted professors in delivering lectures and clarifying complex concepts to students.
· **Deep Learning (COMP 5970/6970)**:
· Collaborated with faculty to design curriculum and lesson plans incorporating the latest advancements in the field.
· Organized and led lab sessions, ensuring students grasped practical applications of deep learning algorithms.
· **Intro To Operation Systems (COMP 3500)**:
· Assessed student assignments and offered insightful feedback to enhance their comprehension.
· Supported the instruction of OS161 concepts, ensuring students understood both theoretical and practical aspects.
· Conducted supplementary tutorial sessions and addressed individual student queries.
· **Intro to Computing with Python (COMP 1220 LAB)**:
· Led hands-on Python programming labs using Zybooks to provide structured lab instructions and a robust programming exercise environment.

- Taught problem-solving strategies to enable students to tackle challenges independently rather than just providing solutions.
- Actively solicited and incorporated student feedback to refine teaching methods and improve class effectiveness continually.

Auburn University Aug 2019 - Aug 2023
Research Assistant *Auburn, AL*

- Developed a dual-camera system combined with Vicon Motion Capture for precise sitting posture measurement.
- Designed a 14-marker template in Vicon, capturing detailed anatomical data.
- Utilized Nearest Neighbor Algorithm with deep learning heatmaps for posture accuracy assessment.
- Conducted trigonometric analysis to elucidate neck angles from 3D data.
- Investigated methods to enhance sample diversity in BigGAN.
- Explored the generation of adversarial examples through pose modifications in a 3D renderer.

Tianjin Customs Jul 2006 - Jun 2017
Senior Officer *Tianjin, China*

- Worked through various departments, including Airport Customs inspection, Office of the Director, Office of the General Administration of Customs, and Customs International Express Inspection Center.
- Engineered software and web platforms, including "Airport Customs Information," "Statistical Passenger Information System," and "International Express Duty Assignment System."
- Edited content for "China Customs Daily News" at the Office of the General Administration of Customs. (07/2009 to 02/2010).

INTERNSHIP

Edward Via College of Osteopathic Medicine May 2023 - Aug 2023
Machine Learning Research Assistant *Auburn, AL*

- Developed a method to measure sitting posture using a two-camera system and Vicon Motion Capture system.
- Engineered a 14-marker template of the Vicon to capture comprehensive anatomical data.
- Applied a Nearest Neighbor Algorithm using deep learning model heatmaps to assess posture accuracy.
- Applied trigonometric analysis to facilitate a clear understanding of neck angles based on 3D data.

Bosch Center for Artificial Intelligence May 2020 - Aug 2020
Machine Learning Scientist Intern *Pittsburgh, PA*

- Conducted research to enhance traffic sign detection models.
- Investigated the application of generative models for traffic sign data augmentation purposes.
- Developed a framework to upscale small datasets, boosting the accuracy of detection models.

PROJECTS

Development of Super-PAG in Functional Genomics (TodenE Project) Sep 2023 - present

- Collaborate on the clustering method, integrating topology-based and density-based clustering to identify PAG communities within PAG networks.
- Facilitate the formation of Super-PAGs, offering concise description representations in functional genomics.
- Utilize multiple large language models to encapsulate functional information, enhancing semantic and gene member conclusiveness of Super-PAGs through a novel language-based similarity matrix.

Data Analysis and Visualization tool for NCAT (HWTTXpert) May 2022 - Dec 2022

- Collaborated with the National Center for Asphalt Technology (NCAT) professors to comprehend website requirements, designed and developed the website tailored to their needs.
- Implemented a data analysis visualization tool to help visualize the results.
- Conducted testing and designed an API for potential future extensions.

Improve a state of the art image-generator BigGAN Arp 2019 - Nov 2019

- Improve the sample diversity of a pre-trained class-conditional generator by modifying its class embeddings to maximize the log probability outputs of a classifier pre-trained on the same dataset.

A simple GUI tool for generating adversarial poses of objects. Sep 2018 - Nov 2018

- Add different Deep Learning models to the GUI and implement the prediction functions.
- https://github.com/airalcorn2/strike-with-a-pose

TALKS

03/2024: **MidSouth Computational Biology and Bioinformatics Society (MCBIOS 2024)**. TodenE: Topology-Based and Density-Based Ensembled Clustering for the Development of Super-PAG in Functional Genomics using PAG Network and LLM

08/2023: **Auburn University College of Nursing**. Apply Human Posture Estimation models to detect the sitting posture

10/2022: **Columbus Data Science Forum**. A Vision of Health: Machine Learning, Posture, and Healthcare Applications

09/2022: **National Central University**. A cost-effective method for improving and re-purposing large, pre-trained GANs

12/2020: **ACCV**. A cost-effective method for improving and re-purposing large, pre-trained GANs by fine-tuning their class-embeddings

02/2020: **Columbus Data Science Forum**. The Coolest Idea in Machine Learning in the past decade: Generative Adversarial Networks

SELECTED PRESS COVERAGE

2021: **IEEE Spectrum**. 7 Revealing ways AIs fail

2019: **Nature**. Why deep-learning AIs are so easy to fool

2019: BinaryDistrict. AI Applications and "Black Boxes"

2019: **New Scientist**. The best image-recognition AIs are fooled by slightly rotated images

2019: Communications of ACM. March 2019 news.

2019: Manifold.ai. We need to build interactive computer vision systems

2019: Medium. AI is about to get bigger, better, and more boring

2019: Adobe. Neural Networks Easily Fooled by Common Objects Seen from New Angles

2019: Gizmodo. Thousands of Reasons That We Shouldn't Trust a Neural Network to Analyze Images

2018: ZDNet. Google's image recognition AI fooled by new trickstext

2018: Nautilus. Why Robot Brains Need Symbols

2018: Gizmodo. Google's 'Inception' Neural Network Tricked By Images Resembling Bad Video Games

2018: Gary Marcus. The deepest problem with deep learning

AWARDS

2020: Huawei Best Application Paper Honorable Mention at ACCV

2020: Outstanding Master Student Award

2019: Research assistantship for the work funded by joint NSF and Adobe Research: $4,500

2018: Research assistantship for the work funded by NSF: $4,500

SERVICES AND ACTIVITIES

Reviewing papers

· Conferences: ICDE, VLDB, ICDM, CVPR, ACCV, TKDE, JMIR

Volunteer

· 2019 Computer Vision and Pattern Recognition (CVPR) in Long Beach
· 2019 BEST Robotics competition in Auburn
· 2017-2019 E-day in Auburn