Jerry A. Yang

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Google Scholar

Education

Stanford University — September 2020 - Present
Ph.D. Electrical Engineering, GPA: 4.06/4.00 — *Stanford, CA*

Stanford University — January 2022 - June 2023
M.A. Education, GPA: 4.18/4.00 — *Stanford, CA*

University of Texas at Austin — August 2016 - May 2020
Bachelor of Science in Electrical Engineering, GPA: 3.95/4.00 — *Austin, TX*

Certificates in Core Texts and Ideas, LGBTQ/Sexualities Studies, & Evidence and Inquiry
Capstone Project: High-Speed Data Acquisition System for Nanoscale Imaging [Link]
Thesis: LGBTQ+ Engineering Students: Culture, (Non)Visibility, and Resistance [Link]

Research Interests

- Strain engineering of 2D materials on flexible and CMOS-compatible substrates
- Flexible electronics, in-sensor computing, and intelligent sensing
- Micro- and nanofabrication techniques
- Diversity, equity, and inclusion and novel pedagogies in engineering education

Research Experience

Graduate Student Researcher — September 2020 - Present
Prof. Eric Pop, Poplab, Electrical Engineering, Stanford University — *Stanford, CA*

- Develop and process recipes to impart in-plane biaxial strain on monolayer 2D transition metal dichalcogenide (TMD) materials on flexible substrates
- Investigate effect of strain on electronic mobility, defects, and charge transport in TMD materials

Graduate Student Researcher — September 2020 - Present
Prof. Sheri Sheppard, DEL Lab, Mechanical Engineering, Stanford University — *Stanford, CA*

- Developed research projects within critical theory, counterstory, and liberatory frameworks of engineering education
- Led participant recruitment and data collection for a mixed-methods study on first-generation and low income (FGLI) students and their internship experiences
- Designed and integrate trustworthiness measures into qualitative and mixed-methods studies

Undergraduate Researcher — January 2019 - May 2020
Prof. Edward Yu, etylab, Electrical and Computer Engineering, University of Texas at Austin — *Austin, TX*

- Optimize growth of 2D WS_2-WSe_2-WS_2 lateral heterostructures
- Inspect quality of samples with optical microscopy and Raman spectroscopy
- Assist with MRSEC and NASCENT REU programs during summer

Undergraduate Researcher August 2018 - May 2020
Prof. Maura Borrego, Center for Excellence in Engineering Education, University of Texas at Austin *Austin, TX*

- Designed mixed-methods study to investigate experiences of LGBTQ+ students in the UT Austin Department of Electrical Engineering
- Designed survey and focus group questions targeting undergraduate engineering students
- Cleaned and analyzed survey and focus group data using R/RStudio and QDAMiner

Visiting Undergraduate Researcher May 2018 - August 2018
Prof. Kevin Walsh, Micro/Nanotechnology Center, University of Louisville *Louisville, KY*

- Conducted simulations using CoventorWARE MEMS modeling software to optimize novel MEMS memory device
- Wrote Python scripts to automate simulation analyses in CoventorWARE
- Fabricated, packaged and tested a solar cell using MNTC cleanroom facilities
- Designed lesson plan to accompany solar cell fabrication process

Teaching Interests

- Semiconductor theory, devices, and fabrication
- Circuit theory and design
- Quantum mechanics
- Engineering education research methods
- Equity issues in engineering and engineering education

Teaching Experience

Graduate Course Assistant September - December 2023
Stanford University, Electrical and Computer Engineering *Stanford, CA*

- Fall 2023: Principles and Models of Semiconductor Devices

Undergraduate Teaching Assistant September 2017 - May 2020
University of Texas at Austin, Electrical and Computer Engineering *Austin, TX*

- Spring 2020: Digital Logic Design
- Fall 2019: Introduction to Computing, Digital Logic Design
- Spring 2019: Digital Logic Design
- Fall 2018: Introduction to Computing, Circuit Theory
- Spring 2018: Introduction to Embedded Systems, Digital Logic Design
- Fall 2017: Introduction to Computing

Professional Experience

Manufacturing Engineering Intern June 2020 - August 2020
Texas Instruments *Austin, TX*

- Modularized a guardian carrier to hold 200mm wafers during batch spin-coat processes using Autodesk Inventor and additive manufacturing/3D printing principles
- Wrote a Python GUI and data processor for automated visual inspection (AVI) systems
- Designed a database storage system in Python for chemical barcode tracking in Python and SQL
- Used root cause analysis and statistical process control to analyze and provide feedback on fab operations data

Engineering Intern June 2017 - August 2017
Boumatic Robotics, LLC *Houston, TX*

- Deconstructed a software API to communicate serially with an embedded RFID reader using an external microcontroller
- Designed an embedded system to test the quality of cable connectors
- Began low-level software development of a UHF RFID reader
- Wrote documentation for adaptation of high-level and low-level software to accommodate an RFID reader protocol

Publications

1. A. Michail, **J. A. Yang**, K. Filintoglou, N. Balakeras, C. A. Nattoo, C. S. Bailey, A. Daus, J. Parthenios, E. Pop, and K. Papagelis, "Biaxial strain transfer in monolayer MoS_2 and WSe_2 transistor structures," manuscript in preparation.
2. **J. A. Yang** and K. R. Moore, "At the Crossroads: Reconsidering Intersectionality's Use in Engineering Education," manuscript in preparation.
3. **J. A. Yang**, "Engineer, Asian, and Gay As Fuck: Counterstorytelling as Means for Methodological Activism and Intersectional Healing in Engineering Education," manuscript under review.
4. M. Jaikissoon, Ç. Köroğlu, **J. A. Yang**, K. M. Neilson, K. C. Saraswat, and E. Pop, "CMOS-compatible Strain Engineering of Monolayer Semiconductor Transistors," manuscript under review.
5. **J. A. Yang**, R. K. A. Bennett, L. A. Hoang, Z. Zhang, K. J. Thompson, A. J. Mannix, and E. Pop, "Biaxial Tensile Strain Enhances Electron Mobility of Monolayer Transition Metal Dichalcogenides," manuscript under review. Preprint: arXiv:2309.10939 [Link]
6. **J. A. Yang**, J. D. Towles, S. D. Sheppard, and S. A. Atwood, "'Barbed-Wire Boundaries': Hidden Curriculum, First-Generation and Low-Income Engineering Students, and Internship Acquisition," manuscript in press. DOI: 10.1615/JWomenMinorScienEng.2023046383 [Link]
7. B. Bakka, M. Jennings, and **J. A. Yang**, "Today's grad students, tomorrow's faculty: LGBTQIA+ graduate student experiences navigating the insider/outsider paradox in STEM," in *Queerness as Doing in Higher Education*, A. Duran, T. J. Jourian, R. Miller, J. Cisneros, Eds. Routledge, Nov. 2022. DOI: 10.4324/9781003255284-13 [Link]

8. **J. A. Yang**, M. K. Sherard, C. Julien, and M. Borrego, "Resistance and Community-building in LGBTQ+ Engineering Students," *J. Women Minor. Sci. Eng.*, vol. 27, no. 4, pp. 1-33. April 2021. DOI: 10.1615/JWomenMinorScienEng.2021035089 [Link]

9. **J. A. Yang**, M. K. Sherard, C. Julien, and M. Borrego, "LGBTQ+ in ECE: Culture and (Non)visibility," *IEEE Trans. Educ.*, vol. 64, no. 4, pp. 345-352. March 2021. DOI: 10.1109/TE.2021.3057542 [Link]

10. J.-T. Lin, P. D. Shuvra, **J. A. Yang**, S. McNamara, K. Walsh, and B. Alphenaar,"Buckled Beam Mechanical Memory using an Asymmetric Piezoresistor for Readout," *J. Micromech. Microeng.*, vol. 30, no. 7, p. 075006. May 2020. DOI: 10.1088/1361-6439/ab870c [Link]

Conference Proceedings

1. **J. A. Yang**, L. A. Hoang, T. Peña, Z. Zhang, A. J. Mannix, and E. Pop, "Effects of High-κ Dielectric Encapsulation and Carrier Density on Raman Scattering in Synthetic Monolayer WS_2," in *MRS Spring Meeting and Exhibit*, Seattle, WA, USA, April 2024. In preparation.

2. **J. A. Yang**, "Asian/Americans and Affirmative Action: Histories and Policy Implications for Broadening Participation in Materials Science," in *MRS Spring Meeting and Exhibit*, Seattle, WA, USA, April 2024. In preparation.

3. C. A. Nattoo and **J. A. Yang**, "The Professionalism Barrier: Sociocultural and Institutional Impacts on Broadening Participation in Materials Science," in *MRS Spring Meeting and Exhibit*, Seattle, WA, USA, April 2024. In preparation.

4. **J. A. Yang** and E. Pop, "A Tale from the Queer Resistance: Healing and Activism from with(in) Materials Science," in *MRS Spring Meeting and Exhibit*, Seattle, WA, USA, April 2024. In preparation.

5. N. Ha, M. C. Ausman, A. Peters, **J. A. Yang**, L. Stanley, Q. Zhu, V. Wang, A. Patrick, and J. Tokuhisa, "APIDA STEM Students: Lived Experiences at Disciplinary Intersections," in *Assoc. Asian-Am. Stud. Conf.*, Seattle, WA, USA, April 2024. In preparation.

6. **J. A. Yang**, R. K. A. Bennett, L. A. Hoang, Z. Zhang, K. J. Thompson, A. J. Mannix, and E. Pop, "Mobility Enhancement of Monolayer WS_2 from Biaxial Tensile Strain," in *MRS Fall Meeting and Exhibit*, Boston, MA, USA, Nov. 2023.

7. **J. A. Yang**, Z. Zhang, L. A. Hoang, A. J. Mannix, E. Pop, "Electron Mobility Enhancement of n-type Monolayer Transition Metal Dichalcogenides from Biaxial Tensile Strain," in *California-US Government Workshop on 2D Materials*, Irvine, CA, USA, Sep. 2023.

8. **J. A. Yang**, a. l. antonio, and S. D. Sheppard, "Overrepresented $\neq$ Not-Marginalized: Unpacking the Racialization of Asians and Asian-Americans in Engineering Education," in *2023 ASEE Annu. Conf. Expo.*, Baltimore, MD, USA. June 2023. https://peer.asee.org/43837 [Link]

9. **J. A. Yang**, "Work-In-Progress: Intersectionality, (Re)Defined: A Scoping Review of Intersectionality in the Journal of Engineering Education," in *2023 ASEE Annu. Conf. Expo.*, Baltimore, MD, USA. June 2023. https://peer.asee.org/44423 [Link]

10. K. M. Neilson, M. Tie, J-S. Ko, M. Jaikissoon, **J. A. Yang**, R. Chen, A. Majumdar, K. C. Saraswat, T. F. Heinz, and E. Pop, "Lithographic Damage to Two Dimensional Materials Probed by Photoluminescence and Raman Spectroscopy," *American Physical Society March Meeting 2023*, Las Vegas, NV, March 2023. https://meetings.aps.org/Meeting/MAR23/Session/D34.14 [Link]

11. **J. A. Yang** and C. A. Nattoo, "Balancing Social, Personal, and Work Responsibilities for Minoritized Doctoral Students in Engineering," in *2022 ASEE Annu. Conf. Expo.*, Minneapolis, MN, USA. June 2022. https://peer.asee.org/41789 [Link]

12. **J. A. Yang**, J. D. Towles, S. D. Sheppard, and S. A. Atwood, "Internships' impact on recognition for first-generation and/or low-income students," in *2022 ASEE Annu. Conf. Expo.*, Minneapolis, MN, USA, June 2022. https://strategy.asee.org/40755 [Link]

13. M. Jaikissoon, **J. A. Yang**, K. M. Neilson, E. Pop, and K. C. Saraswat, "Mobility Enhancement of Monolayer MoS_2 Transistors using Tensile-Stressed Silicon Nitride Capping Layers," in *IEEE Device Research Conference 2022*, Columbus, OH, USA, June 2022. 10.1109/DRC55272.2022.9855790 [Link]

14. M. Jaikissoon, **J. A. Yang**, E. Pop, and K. Saraswat, "Strain Engineering Metal Contacts to Monolayer MoS_2 Transistors," in *MRS Spring Meeting and Exhibit*, Honolulu, HI, USA, May 2022.

15. **J. A. Yang**, A. Michail, K. J. Thompson, C. A. Nattoo, C. S. Bailey, J. Parthenios, A. Daus, K. Papagelis, and E. Pop, "Probing the Effect of Biaxial Strain on Raman Scattering of CVD-grown WSe_2 Monolayers," in *MRS Spring Meeting and Exhibit*, Honolulu, HI, USA, May 2022.

16. V. X.-W. Chou, **J. A. Yang**, B. Bakka, and M. Borrego, "Transformational resistance for multiple-marginalized LGBTQIA+ students with incongruent identity development," in *Collab. Netw. Eng. Comput. Divers.*, New Orleans, LA, USA, Feb. 2022. https://peer.asee.org/36078 [Link]

17. B. Bakka, M. Jennings, H. E. Rodriguez-Simmonds, S. Clancy, A. Pasek, and **J. A. Yang**, "Student panel: Understanding queer experiences in engineering," in *2022 ASEE Annu. Conf. Expo.*, Virtual, June 2021.

18. **J. A. Yang**, A. Boklage, M. K. Sherard, C. Julien, and M. Borrego, "Cultural scripts, space, and identity: Perspectives of two LGBTQ+ engineering students on inclusive spaces," in *Collab. Netw. Eng. Comput. Divers.*, Virtual, Jan. 2021. https://peer.asee.org/36078 [Link]

19. **J. A. Yang** and N. K. Telang, "Increasing student understanding of diversity/inclusion issues in a first-year engineering classroom," in *Proc. FYEE Conf.*, East Lansing, MI, USA, July 2020. https://strategy.asee.org/35774 [Link]

20. **J. A. Yang**, P. D. Shuvra, S. McNamara, B. Alphenaar, and K. Walsh, "A piezoresistive MEMS memory device using a buckled beam," in *TechConnect Briefs: Proc. 2019 TechConnect World Innovation Conf. Expo*, F. Case, M. Laudon, B. Romanowicz, Eds, 2019, pp. 330-333. [Link]

Workshops & Invited Talks

1. **J. A. Yang**, "Narrating Your Counterstory: Lessons from LGBTQ+ Engineering Students," *Society of Hispanic Professional Engineers,* June 2022.

2. B. Bakka, M. Jennings, H. E. Rodriguez-Simmonds, S. Clancy, A. Pasek, and **J. A. Yang**, "Student panel: Understanding queer experiences in engineering," May 2021. [Link]

Scholarships/Fellowships

- National Science Foundation Graduate Research Fellowship, Summer 2021 - Spring 2024
- UT Austin Unrestricted Endowed Presidential Scholarship, Spring 2019

- UT Austin Undergraduate Research Fellowship, Spring 2019
  Research Proposal: Intersecting Identities of LGBTQ+ Engineering Students
- Wilburn H. Bohne Friends of Alec Scholarship in Engineering, Fall 2016 - Spring 2020

Honors and Awards

- UT Austin 2019 School of Undergraduate Studies Writing Flag Award, 2nd Place, March 2020
  Paper: http://dx.doi.org/10.26153/tsw/7623 [Link]
- Cockrell School of Engineering College Scholar, 2017-2018, 2018-2019
- University Honors, Fall 2016 - Spring 2020
- Vice-President of Math and Science Teachers of Tomorrow, Spring 2017 - Spring 2018

Professional Affiliations

- Materials Research Society (MRS), Student Member
- Institute for Electrical and Electronic Engineers (IEEE), Student Member
- American Society for Engineering Education (ASEE), Student Affiliate
- Materials Research Science and Engineering Centers (MRSEC) - UT Austin, Student Researcher, Spring 2019 - Spring 2020
- Cockrell School of Engineering Diversity and Inclusion Committee, Student Member, 2019-2020
- National Nanotechnology Coordinated Infrastructure (NNCI) - University of Louisville, Student Researcher, Summer 2018
- National Science Teachers Association (NSTA), Student Member, 2017-2019

Skills

Fabrication techniques: Optical lithography, electron-beam lithography (EBL), thermal oxidation, e-beam evaporation, liftoff, atomic layer deposition (ALD), chemical vapor deposition (CVD), plasma-enhanced chemical vapor deposition (PECVD), plasma etching, resist strip/ashing, 3D FDM printing, laser cutting

Languages: Java, C, C++, ARM Assembly, Verilog, LaTeX, R, Python, SQL

Technologies: Autodesk Inventor, Fusion360, MATLAB, Silvaco, CoventorWARE, LabVIEW, RStudio, KLayout