

ANAGHA BELAVADI SUBRAMANYA

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EDUCATION

Massachusetts Institute of Technology <i>Doctoral Degree in Materials Science and Engineering, GPA: 4.4/5.0.</i>	Cambridge, MA <i>Expected 2027</i>
Indian Institute of Technology Madras B.Tech., Metallurgical and Materials Engineering, GPA: 9.18/10.0.	Chennai, India <i>Class of 2022</i>
VVS Sardar Patel PU College Class XII, Score: 96.5 %.	Bangalore, India <i>Class of 2018</i>
Sri Chaitanya Techno School Class X, GPA: 10.0/10.0.	Bangalore, India <i>Class of 2016</i>

RESEARCH EXPERIENCE

Massachusetts Institute of Technology, Olivetti Group <i>PhD Student</i>	Cambridge, MA <i>Dec 2022 - Present</i>
<ul style="list-style-type: none">• Conducting environmental Life Cycle Assessments (LCAs) to quantify carbon emissions in semiconductor manufacturing, focusing on fabrication processes and materials consumption.• Developing bottom-up and top-down modeling frameworks to assess emissions at both the process level and the industry level.• Bridging data gaps in semiconductor footprinting by working with industry consortium PAIA (Product Attributes to Impact Algorithm) and using uncertainty quantification for Scope 1, 2, and 3 emissions.	
IIT Madras, Electronic Materials and Thin Films Lab <i>Undergraduate Researcher, Project: Thin Film Heaters</i>	Chennai, India <i>May 2020 - Apr 2021</i>
<ul style="list-style-type: none">• Developed a nanowire-based thin film heater that has potential in the area of flexible, wearable, and anti-fogging applications.• Modeled transient behavior and temperature distribution of the heater using MATLAB and COMSOL.	
<i>Undergraduate Researcher, Project: Drude Model Simulation</i>	<i>Sep 2020 - Dec 2021</i>
<ul style="list-style-type: none">• Explained the Drude Model based on 2D & 3D random walk problems to understand electrical conduction in metals.• Performed simulations in MATLAB using probabilistic techniques and Monte-Carlo simulations.	
IIT Madras, Soft Matter and Complex Fluids Lab <i>Undergraduate Researcher, Project: Marangoni Flows</i>	Chennai, India <i>Oct 2020 - May 2022</i>
<ul style="list-style-type: none">• Investigated the stability of a thin self-rewetting film exhibiting Quadratic Thermocapillary effect subjected to heating.• Constructed stability maps to study the stability of liquid films in a specific parameter window.• Studied substrates leaving patterned wettability additionally.	
IIT Madras, Patra Research Group <i>Undergraduate Researcher, Project: Polymer Property Prediction</i>	Chennai, India <i>Feb 2021 - May 2021</i>
<ul style="list-style-type: none">• Predicted the glass transition temperatures (T_g) of polymers only on the basis of the chemical structure of their monomers.• Modeled using a combination of convolutional neural networks by converting SMILES strings to binary readable images.• Obtained lower relative errors of about 4%, in comparison to the original work of 6%.	

PUBLICATIONS

- N. Bashir, V. Gohil, A. Belavadi Subramanya, M. Shahrad, D. Irwin, E. Olivetti, and C. Delimitrou, “**The Sunk Carbon Fallacy: Rethinking Carbon Footprint Metrics for Effective Carbon-Aware Scheduling,**” in *Proceedings of the 2024 ACM Symposium on Cloud Computing (SoCC '24)*, Association for Computing Machinery, New York, NY, USA, 2024, pp. 542–551. DOI: 10.1145/3698038.3698542.
- T. Bhargavi, N. M. Nair, A. Belavadi, and P. Swaminathan, “**Fabrication of a Printed Heater Using a Composite of Silver Nanowires and Neutral PEDOT:PSS,**” *IEEE Journal on Flexible Electronics*, vol. 2, no. 5, pp. 395-401, Sept. 2023. DOI: 10.1109/JFLEX.2022.3224636.

CONFERENCE PRESENTATIONS

- A. Belavadi, A. Gupta, R. Kirchain, G. Norris, and E. Olivetti, “PAIA – Product Attributes to Impact Algorithm,” presented at *Consultation Meeting – Towards Ambitious LCA Product Category Rules for ICT Equipment, Workshop at Electronics Goes Green 2024 Conference*, Berlin, Germany, June 2024.

POSTER PRESENTATIONS

- A. Belavadi Subramanya, Y. Gao, N. Bashir, J. Cuff, J. Gregory, and E. Olivetti, “Optimizing Server Replacement in Datacenters for Sustainable Energy Management,” *MIT Energy Initiative Annual Research Conference*, Cambridge, MA, September 2024.
- T. Bhargavi, N. M. Nair, A. Belavadi, and P. Swaminathan, “Silver nanowire-based flexible and transparent wearable heaters,” *5th International Conference on Emerging Electronics (IEEE-ICEE 2020)*, IIT Delhi, November 2020.

PROFESSIONAL TALKS

- A. Belavadi Subramanya, “Enhancing Environmental Sustainability in Semiconductor Manufacturing,” *Seagate Virtual AI/ML Distinguished Speaker Series*, August 9, 2024.
- A. Belavadi Subramanya, “Climate Implications of Carbon and Computing,” *MITEC Student Speaker Series*, Massachusetts Institute of Technology, October 27, 2024.

PROFESSIONAL EXPERIENCE

Seagate Technology

Site Visit

Bloomington, MN

July 2024 - Aug 2024

- Conducted on-site fab assessment, interviewing engineers and sustainability teams to understand environmental challenges in manufacturing.
- Engaged with experts across CMP, electroplating, ALD, and wet etch to gather insights on energy use, material flows, and waste management.
- Interviewed EHS teams and tool engineers to explore PFAS reduction, tool energy standardization, and emissions tracking for semiconductor-adjacent processes.

Qualitech Precision Industries

Industrial Intern

Bangalore, India

Dec 2020 - Jan 2021

- Monitored machining used to make parts for various machines, including automotive, medical and aeronautical applications.
- Studied CNC, VMC, HMC, Cylindrical Grinding, other SPMs and programmed Coordinate Measuring Machine(CMM).

Vyoma Linguistic Labs Foundation

Web Development Intern

Bangalore, India

May 2019 - Jul 2019

- Developed a web-based tool to learn and practice a Sanskrit grammatical aspect using HTML and JavaScript.

TEACHING EXPERIENCE

IIT Madras, Course: MM2090 - Introduction to Scientific Computing Chennai, India
Teaching Assistant April 2022 - June 2021

- Evaluated 30+ assignments, mentored 25+ students and conducted induction sessions to introduce them to research.

IIT Madras, Course: MM3110 - Computational Materials Engineering Lab Chennai, India
Teaching Assistant July 2021 - November 2021

- Assisted in preparing assignments, solutions, graded 40+ assignments and handled weekly programming lab sessions.

IIT Madras, Course: MT4110 - Computational Methods in Materials Engineering Chennai, India
Teaching Assistant July 2021 - November 2021

- Evaluated 20+ assignments and organized sessions to address difficulties faced by students.

Gradskey, Course: Taught Computational Mathematics with Sagemath Remote Work
Course Instructor

- Taught Computational Mathematics with Sagemath, created slides, assignments and other teaching materials to aid students.

LEADERSHIP and VOLUNTEER EXPERIENCE

Tang Hall Residents Association, MIT Cambridge, MA
Sustainability Chair May 2023 - May 2024

- Organized events on recycling, composting, and gardening, including a quiz-based succulent giveaway to promote sustainability.
- Led a volunteer student gardening group, growing herbs and vegetables for the community.

National Olympiad Training, National Service Scheme (NSS), IIT Madras Chennai, India
Project representative Jul 2019 - May 2020

- Supervised execution of a teaching program for destitute students, managed 10+ student volunteers and taught 40+ students.

Geetha Govinda Samskrita Sangha (GGSS) Bangalore, India
Volunteer Sanskrit Teacher September 2015 - May 2022

- Taught Sanskrit, a 5000 year old ancient language at a non profit organization for 8 years.
- Taught two batches of 30+ students, judged competitions, assisted with preparing modules for Sanskrit grammar camps.

Sponsorship and PR team, Amalgam 2020, IIT Madras Chennai, India
Coordinator Jan 2020 - March 2020

- Handled multiple POCs of large MNCs and obtained deals worth Rs. 20,000 for Amalgam, 2020.

Unconference 2019-2020, E-cell, IIT Madras Chennai, India
Participant Dec 2019 - Jan 2020

- Proposed an outreach plan for educational startups.
- Finalist among 200+ teams in the business case study event.

SKILLS

Programming Languages: Python, MATLAB, C, C++, HTML, \LaTeX , SQL, JavaScript.

Operating Systems: MAC OS X and Linux.

Languages: English (Proficient), Kannada (Native), Sanskrit (Proficient), Hindi (Proficient), Tamil (Elementary), Telugu (Elementary).

Interests: Environmental Sustainability, Science Policy, Scientific Writing, Bharathanatyam, Carnatic Music, Travel, Crocheting, Painting.