

Dr. Swapnil Sarjerao Jagtap

Forbes 30 Under 30 | Georgia Tech 40 Under 40 | MIT Technology Review Innovators Under 35

Post-doctoral Research Fellow, Aerospace Engineering University of Michigan, Ann Arbor

Revolutionising the Aviation and Energy sector with disruptive and sustainable technologies to prevent climate change, and improve human and environmental health

Sustainable Aviation & Energy | Zero Emissions Aviation Systems |
Sustainable Innovation | Carbon Lean Aircraft, Energy, and Propulsion Systems |
Alternative Fuels and Energy Vectors | Model Based Systems Engineering |
Inter-disciplinary Design and Optimization





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EDUCATION

Ph.D., Faculty of Engineering, 2023

President's Ph.D. Scholar at **Imperial College London**; Research supervisors: Dr. Marc Stettler and Prof. Peter Childs Research title: *Evaluation of technology and energy vector combinations for decarbonising future subsonic long-range aircraft*

Master of Science in Aerospace Engineering (Aircraft Propulsion and Combustion)
Georgia Institute of Technology (GIT), Atlanta, USA; Graduated in 2018

Relevant Courses: Kinetics and Thermodynamics of Gases, Viscous Fluid Flow; Combustion, Advanced Aerodynamics; Aerospace Systems Engineering, Transportation-Energy-Air Quality; Sustainable Engineering; Propulsion system design; Linear algebra; Classical Mathematical Methods in Engineering; Math Methods of Applied Sciences I and II.

Bachelor of Engineering, Mechanical Engineering (ME), 2012

K.J. Somaiya College of Engineering (KJSCE), University of Mumbai, India; First Class with Distinction

Relevant Coursework: Thermodynamics, thermal engineering, heat and mass transfer, fluid mechanics, hydraulics machinery, IC engines, engineering mechanics: statics and dynamics, engineering drawing, engineering mathematics, machine drawing, strength of materials, theory of machines, machine design.

INTERNATIONAL HONORS & DISTINCTIONS

Prestigious Titles

Y MIT Technology Review Innovators Under 35, 2022

(Link: https://tinyurl.com/aa6crc7r)

Y Georgia Tech 40 under 40 innovator, trend-setter, and people to watch, Georgia Institute of Technology, 2021.

(Link: https://tinyurl.com/57zuujxz)

Υ Forbes 30 under 30 disruptor and visionary, Forbes Magazine in 'manufacturing and industry' category, 2020.

(Link: https://tinyurl.com/sgovx4n)

Prestigious Fellowships

- Υ 'Sir Mangaldas Nathubhai Research Fellow', University of Mumbai, India, 2018 2021 and 2015 2017.
- Υ Global Fellow of Imperial-Tokyo Tech program on Climate action, 2019.
- Ψ Fellow in Cohort 5, Science and Solutions for a Changing Planet Doctoral Training Partnership, Doctoral Training Partnership funded by Natural Environment Research Council, UK Government, 2018 2021.
- Υ 'Leon A. Tolve Fellow' at Georgia Institute of Technology, USA, 2015.

Prestigious Recognition of Research

Research article indexed by the Transportation Research Board, US National Academies (Science, Engineering, Medicine),
 2024 (Link: https://tinyurl.com/5n7au6hd)

INTERNATIONAL HONORS & DISTINCTIONS

Prestigious Scholarships and Travel Grants

- Υ Imperial College London's President's Ph.D. Scholar 2018, (4 years of funding received based on a research proposal)
- Υ 'G.I. Patel' Scholar, University of Mumbai, India, 2015.
- Y 'Lotus Trust' Scholar, Mumbai, India, 2015 and 2013.
- Υ 'Tata Chemicals Golden Jubilee Foundation' travel grant, 2018.
- Υ 'Sir Mangaldas Nathubhai travel grant', University of Mumbai, India, 2018 and 2015.
- Υ 'Dean of College of Engineering' travel grant, GIT, 2016.
- Υ 'Student Government Association' travel grant, GIT, 2016.
- Υ 'Tata Chemicals Golden Jubilee Foundation' travel grant, 2015.
- Υ 'Sir Ratan Tata Trust' travel grant, 2013.
- Υ 'Sakal India Foundation' travel grant, Pune, India, 2013.
- Υ 'Tata Chemicals Golden Jubilee Foundation' travel grant, 2013.

Prestigious Awards

- **Υ** Bachelor of Engineering (Mechanical): First Class with Distinction; 5th rank award in KJSCE; 41st rank award in the University of Mumbai from approximately 5000 students, *2012*.
- Υ 2nd rank award in 3rd year of ME at KJSCE, (2011), 3rd rank award in 2nd year of ME at KJSCE, (2010), and mostly in the top 3 rankers of the batch throughout undergraduate studies (2008 2012).
- Υ Subject Topper awards: Applied Chemistry II-76%, Applied Mathematics IV-98% and Hydraulics Machinery-73%.
- Υ Nominated for State-level research award (State Government of Maharashtra, India) in academic year (2011 2012).

MEMBER/ROLE IN DISTINGUISHED ORGANIZATIONS

Membership in associations demanding outstanding achievement, cohort member of:

- Y Sir Mangaldas Nathubhai Research Fellows, 2018 2020 and 2015 2017.
- Υ Global Fellow of Imperial-Tokyo Tech program on Climate action, 2019
- Y President's Ph.D. Scholars, Imperial College London, 2018, for 4 years
- **Υ** Cohort 5 Fellow of Science and Solutions for a Changing Planet Doctoral Training Partnership, Doctoral Training Partnership funded by Natural Environment Research Council, UK Government, 2018 2021.
- Υ 'Leon A. Tolve Fellows' at Georgia Institute of Technology, USA, 2015.

Active panel member for judging the work of others as a reviewer:

- Y Environment International journal (impact factor 10.3), Elsevier publications (7 manuscripts)
- Y Applied Energy journal (impact factor 10.1), Elsevier publications (1 manuscript)
- Y International Journal of Hydrogen Energy (impact factor 8.1), Elsevier publications (5 manuscripts)
- Υ Transportation Research Part D: Transport and Environment journal (impact factor 7.4), Elsevier publications (2 manuscripts)
- Y Fuel Journal (impact factor 6.7), Elsevier publications (1 manuscript)
- Y Ecological Economics Journal (impact factor 6.6), Elsevier publications (1 manuscript)
- Y Sustainable Futures Journal (impact factor 3.3), Elsevier publications (1 manuscript)
- Υ Proceedings of the Institution of Mechanical Engineers, Part A, Journal of Power and Energy (impact factor 1.2), Sage publications (1 manuscript)
- Υ International Conference on Technologies for Energy, Agriculture, and Healthcare (ICTEAH), 2024 (in reviewer panel)

INCLUSION IN DISTINGUISHED PANEL

- Member of the *International Advisory Board* of International Conference on Technologies for Energy, Agriculture, and Healthcare (ICTEAH), 2024
 (Link: https://tinyurl.com/3r8u3rpr)
- One of the four members in a panel discussion on 'Accelerating the green energy transition' from MIT Technology Review Innovators Under 35, 2022
 (Link: https://tinyurl.com/yc8y57rm)
- Υ One of the three members at 'The only way is UP' a panel discussion on the future of aviation, July 2020

(Link: https://tinyurl.com/yy9q785c)

PATENTS

- Y Swapnil Jagtap, "Heat recuperation system for the family of shaft powered aircraft gas turbine engines"
 - United States Patent and Trademark Office [Patent Granted US10358976B2] (Link: https://tinyurl.com/y3qt2fk6)
 - Indian Patent office [Patent Granted 480857]

NEWS ARTICLES/INTERVIEWS

- Υ NEWS publication by H2 EnergyNews.biz titled 'Liquid Hydrogen in Long-Range Aviation: Evaluating the Potential of Blended-Wing-Body Aircraft', 2024

 (Link: https://tinyurl.com/6enhsv8j)
- Υ NEWS publication by H2 EnergyNews.biz titled 'Conceptual Design-Optimization of Future Hydrogen-Powered Ultrahigh
 Bypass Ratio Geared Turbofan Engine', 2024

 (Link: https://tinyurl.com/vnkm3ye4)

NEWS ARTICLES/INTERVIEWS

Y Interview for Imperial College London magazine on sustainable aviation, 2024 (Link to video: https://tinyurl.com/422j8apf) (Link to print interview: https://tinyurl.com/53jtrert) Υ Interview with Imperial College London in the 'Belonging BAME' series, 2023 (Link: https://tinyurl.com/2cyp8z5w) Y In NEWS story of Global CO₂ initiative, University of Michigan, Ann Arbor, 2023 (Link: https://tinyurl.com/mr2r8vx2) Υ In NEWS story of Imperial College London, UK, June 2022 (Link: https://tinyurl.com/nhawxnzc) Y In the MIT Technology Review Innovators Under 35, Europe list, May 2022 (Link: https://tinyurl.com/aa6crc7r) Y In Forbes 30 under 30 Europe list, Manufacturing and Industry category, March 2020 (Link: https://tinyurl.com/y3bxrk34) Υ One of the achievers of external accolades at Imperial College, *June 2021* (Link: https://tinyurl.com/mdceuprb) Y Special mention of external accolades at Imperial College, *June 2021* Y Imperial College London, President's address special mention, *June 2021* (Link: https://tinyurl.com/9esasrdk) Y Forbes profile, March 2020 (Link: https://tinyurl.com/yxhpj58q) Υ In NEWS story of Georgia Institute of Technology, USA, March 2020 (Link: https://tinyurl.com/ycb9uh7e) Υ In NEWS story of K. J. Somaiya College of Engineering, India, April 2020 (Link: https://tinyurl.com/y5p92ac5) Υ In NEWS story of Imperial College London, UK, June 2020 (Link: https://tinyurl.com/ya3exx54) Y A short story in Imperial College London's Grantham Institute – Climate Change and the Environment, as a future leader, 2020 (Link: https://tinyurl.com/ybaqxue9)

EXPERIENCE

- Y Presently a Post-doctoral Research Fellow (IDEAS lab), Aerospace Engineering, University of Michigan, Ann Arbor, working on government and industry sponsored research projects in transformative sustainable aviation technologies with the application of model-based systems engineering. Particularly, working on aviation technologies and advanced concepts such as electrified and hydrogen propulsion, along with design and optimization of aircraft and their operations. Oct 2023 – Present
 - Collaborated with NASA Glenn Research Center, Collins Aerospace, Raytheon Technologies, and Lockheed Martin
 - Research collaboration, and advising/mentoring Ph.D., M.S., and undergraduate students

Υ Interview with the President's PhD Scholarship office, Imperial College London, 2019

- Y Post-doctoral Research Fellow (Global CO₂ initiative) in the Mechanical Engineering department, University of Michigan, Ann Arbor. Worked on an industry sponsored project (Aramco, USA) on the prospect for CO₂-made sustainable aviation fuel in the USA. The aspects considered in this project were environmental and social lifecycle analysis and techno-economic examination of the emerging technology of sustainable aviation fuel manufacturing. April 2023 – Sept 2023
- Y Fellow of inter-cohort program on 'Innovation for sustainable development' between Imperial College London, University of Surrey, and University of Reading, organized and funded by Natural Environment Research Council, UK. Mar 2019
- Y Graduate teaching assistant/tutor in the Dyson School of Design Engineering for undergraduate course titled 'Energy and design', and 'sustainable transport' module for 'MSc sustainable energy futures' course, Imperial College London.

Jan 2019 – Jan 2022

Graduate Research Assistant in the department of Aerospace Engineering, Georgia Institute of Technology.

Aug 2015 - July 2017

- Graduate Teaching Assistant in the department of Aerospace Engineering for 'ME 1770: Introduction to Engineering Graphics and Visualization', Georgia Institute of Technology, over 5 semesters. Aug 2013 - July 2015
- Research at Georgia Institute of Technology:
 - Worked on 'Gas Turbine Zooming modelling' with Dr. Jimmy Tai and Mr. Russell Denney, Aerospace Systems Design Aug 2015 - July 2017
 - Worked on special research problem 'Hydrodynamics of reacting bluff body wakes' with Dr. Benjamin Emerson and Prof. Timothy Lieuwen Jan 2014 - July 2015
 - Worked on a research problem 'Turbulent combustion' with Prof. Timothy Lieuwen, Georgia Institute of Technology

Aug 2013 - Dec 2013

Worked as a full-time Lecturer in Don Bosco Institute of Technology (Mumbai) in Mechanical Engineering. Taught 'Machine Design', conducted tutorial sessions for Theory of Machines, practical sessions for Mechanical Vibrations.

Jan 2013 - June 2013

- Worked in Premier Industries as a Graduate Engineer Trainee (GET) in the R & D Department, for developing new job scheduling to improve the firm's manufacturing efficiency. Aug 2012 - Dec 2012
- Five Internships (1 month each) at:
 - Premier Industries This firm manufactures sheet metal components for Tata Motors. I got trained in:
 - ▲ The Research and Development department
 - June 2011 July 2011 Process Failure Mode Effects Analysis (PFMEA)-Process capability Dec 2010 - Jan 2011
 - ▲ Planning, Procuring and Manufacturing Press Tools

Dec 2011 - Jan 2012

- K.D Industries This firm manufactures jobs only by casting process. The project was for manufacturing jobs for 'Greaves' Gensets', and I was trained in the Design department. June 2010 - July 2010
- Asian Innovative I was trained in Shop floor management systems (SFMS), for design and manufacturing the conveyor system for Volkswagen Jan 2010 - Feb 2010

JOURNAL ARTICLES

Published

Y Swapnil Jagtap, PRN Childs, MEJ Stettler, "Conceptual design-optimisation of a subsonic hydrogen-powered long-range blended-wing-body aircraft", International Journal of Hydrogen Energy, 96 (2024): 639-651.

(Link: https://tinyurl.com/4rezr8ue)

Y Swapnil Jagtap, PRN Childs, MEJ Stettler, "Conceptual design-optimisation of a future hydrogen-powered ultrahigh bypass ratio geared turbofan engine", International Journal of Hydrogen Energy, 95 (2024): 317-328.

(Link: https://tinyurl.com/49hmjda5)

Υ Swapnil Jagtap, PRN Childs, MEJ Stettler, "Performance sensitivity of subsonic liquid hydrogen long-range tube-wing aircraft to technology developments", International Journal of Hydrogen Energy 50 (2024): 820-833.

(Link: https://www.sciencedirect.com/science/article/abs/pii/S0360319923038508?dgcid=coauthor)

Y Swapnil Jagtap, Peter RN Childs, and Marc EJ Stettler. "Energy performance evaluation of alternative energy vectors for subsonic long-range tube-wing aircraft." Transportation Research Part D: Transport and Environment 115 (2023): 103588.

(Link: https://www.sciencedirect.com/science/article/pii/S136192092200414X?dgcid=coauthor)

Y Swapnil Jagtap. "Systems evaluation of subsonic hybrid-electric propulsion concepts for NASA N+ 3 goals and conceptual aircraft sizing." International Journal of Automotive and Mechanical Engineering 16.4 (2019): 7259-7286.

(Link: https://doi.org/10.15282/ijame.16.4.2019.07.0541)

- Υ Swapnil Jagtap. "An Apparatus for Exchanging Heat with Flow in an Annulus." Journal of Engineering Science and Technology Review 10.1 (2017): 173-176. (Link: https://tinyurl.com/2x6pszcr)
- Υ Emerson, Benjamin, Swapnil Jagtap, J. Mathew Quinlan, Michael W. Renfro, Baki M. Cetegen, and Tim Lieuwen. "Spatiotemporal linear stability analysis of stratified planar wakes: Velocity and density asymmetry effects." Physics of Fluids (1994-present) 28, no. 4 (2016): 045101.

 (Link: http://dx.doi.org/10.1063/1.4943238)
- Υ Swapnil Jagtap and Sanjay Bhandari, "Solar Refrigeration", Social Science Research Network (SSRN, sponsored by Stanford Law School, Chicago Booth, Korea University and European Corporate Governance Institute); Published in the Renewable Energy Journal & Solar Energy Journal, 2012.

 (Link: http://dx.doi.org/10.2139/ssrn.2103115)

In-process

- **Υ Swapnil Jagtap**, Huseyin Acar, Paul Mokotoff, Yi-Chih Wang, Gokcin Cinar. "A comprehensive systems-level review of sustainable aviation technologies and fuels." Progress in Aerospace Sciences. *2025*
- **Υ Swapnil Jagtap**, PRN Childs, MEJ Stettler, "Comparative life cycle evaluation of alternative fuels for a futuristic subsonic long-range aircraft", Sustainable Production and Consumption, *2025*.

CONFERENCE PAPERS

- **Υ** Swapnil Jagtap, Alexandra Strehlow, Maria Reitz, Steven Kestler, Gokcin Cinar. "Model-based systems engineering approach for a systematic design of aircraft engine inlet." AIAA SciTech 2025 Forum. 2025 (Link: https://tinyurl.com/mvnp6693)
- Y Swapnil Jagtap. "Evaluation of blended Fischer-Tropsch jet fuel feedstocks for minimizing human and environmental health impacts of aviation." AIAA Propulsion and Energy 2019 Forum. 2019. (Link: https://tinyurl.com/y4mtm6uf)
- Y Swapnil Jagtap. "Comparative assessment of manufacturing setups for blended sugar-to-aviation fuel production from non-food feedstocks for green aviation." AIAA Propulsion and Energy 2019 Forum. 2019. (Link: https://tinyurl.com/wt7mbk4x)
- **Υ** Swapnil Jagtap. "Assessment of feedstocks for blended alcohol-to-jet fuel manufacturing from standalone and distributed scheme for sustainable aviation." AIAA Propulsion and Energy 2019 Forum. 2019. (Link: https://tinyurl.com/bv6zsfhd)
- Y Swapnil Jagtap. "Sustainability assessment of hydro-processed renewable jet fuel from algae from market-entry year 2020: Use in passenger aircrafts.", 16th AIAA Aviation Technology, Integration, and Operations Conference, p. 4367. 2016.

(Link: http://arc.aiaa.org/doi/abs/10.2514/6.2016-4367)

- **Υ** Swapnil Jagtap. "Aero-Thermodynamic Analysis of Space Shuttle Vehicle at Re-Entry", International IEEE Aerospace Conference 2015 (sponsored by AIAA, IEEE), Yellowstone Conference Center, Big Sky, Montana, 2015.

(Link: http://dx.doi.org/10.1109/AERO.2015.7119253)

Υ Swapnil Jagtap, Sanjay R. Bhandari, "Solar Refrigeration using Triple Fluid Vapor Absorption Refrigeration and Organic Rankine Cycle", SPICON-2012-MECHANICAL, Sardar Patel International Conference, 2012. (Published in-house)

RESEARCH SHOWCASE AT PRESTIGIOUS ORGANIZATIONS

Υ Swapnil Jagtap, Marc Stettler, Peter Childs. 'Identification of sustainable technology and energy vector combinations for future inter-continental passenger aircraft', President Ph.D. Scholars' symposium, *Imperial College London*, *2019*.

(Published in-house)

- Y Swapnil Jagtap, Marc Stettler, Peter Childs. 'Identification of sustainable technology and energy vector combinations for future inter-continental passenger aircraft', Graduate school symposium, *Imperial College London*, 2019. (Published in-house)
- Υ Emerson, Benjamin, Swapnil Jagtap, Michael W. Renfro, Baki M. Cetegen, and Tim Lieuwen. "Stability analysis of reacting wakes: flow and density asymmetry effects.", National Energy Technology Laboratory, Department of Energy Office of Fossil Energy, U.S. Government, 2015.
 (Link: https://tinyurl.com/zep37hrj)
- Y Narayanan Komerath, **Swapnil Jagtap**, Nandeesh Hiremath "Aero-thermoelastic tailoring for waveriders", *U.S. Air Force Summer Faculty Fellowship Program at Eglin Air-force base*, 2014. (Published in-house)

INVITED TALKS

Y 'Can Hydrogen Aviation Save the Skies', Face 2 Face series, H2 EnergyNews.biz, 2025

(Link: https://tinyurl.com/3ck233y3)

'The one about..... Climate Neutral Aviation', Department of Aerospace and Ocean Engineering, Virginia Tech, Jan 2024

(Link: https://tinyurl.com/yeydv3ns)

'The one about Aerospace Engineering, life, and', K. J. Somaiya College of Engineering, Nov 2023

(Link: https://tinyurl.com/bhbm8k9p)

'In conversation with Swapnil Jagtap - A comprehensive guide to writing technical papers', K. J. Somaiya College of (Link: https://tinyurl.com/y3htz4bz) Engineering, Sept 2020

TECHNICAL SKILLS

- Software: SimaPro, Solidworks, GasTurb, MATLAB, Microsoft Office, AUTOCAD, AUTODESK INVENTOR, CATIA, CHEMKIN, JMP, NPSS.
- Υ Programming language: C, C++, HTML, SQL, VB.

RELEVANT ACADEMIC PROJECTS

Y 'An ultra-high bypass ratio 'direct-drive' turbofan engine for the future' for 'Propulsion system design' course.

Jan 2016 - April 2016

'Comparative fuel analysis for the Georgia Tech Tech-Trolley fleet: Diesel and B100 from algae' for 'Sustainable Engineering' Aug 2015 - Dec 2015 course

'Energy flow for B100 from algae' for 'Transportation, Energy and Air quality' course Aug 2014 - Dec 2014

Y 'Commercial service medium-duty work trucks' for 'Transportation, Energy and Air quality' course Aug 2014 - Dec 2014

Υ 'Comparative fuel analysis for the 2030 Cobb-county bus fleet: LNG and B100' for 'Transportation, Energy and Air quality' course Aug 2014 - Dec 2014

Y 'Conceptual vehicle sizing for concepts using hybrid-electric propulsion and sub-systems' for course 'Aerospace Systems Engineering'. Aug 2014 - Dec 2014

Y 'High Mach-number and angle attack aero-thermodynamic analysis of reusable launch vehicles' for course 'Advanced Aerodynamics' Jan 2014 - May 2014

Y 'Hydrodynamics of reacting bluff body wakes'

Jan 2014 - July 2015

Y 'Solar Refrigeration'- (Senior year project)

June 2011 - June 2012

Objective was to provide cold storage in desert/remote areas where 24x7 power is not available, using renewable energy.

CO- AND EXTRA-CURRICULAR ACTIVITIES

- Y President of the Renewable Energy Club, K. J. Somaiya College of Engineering, 2011 2012
- Ψ Won 1st prize for my college (KJSCE) in ISHRAE (Indian Society of Heating Refrigerating and Air-conditioning Engineers) Paper Presentation 2012.
- Y Shortlisted and participated in 'Vigyan Yagya 2012' and 'Marathi Vigyan Parishad: Vigyan Sanshodhan Puraskar 2011' which were State level project competition and State level research-based presentation respectively.
- Ψ Won 3rd prize in project presentation competition in college's Mechanical day IMPULSE 2012.

PROFESSIONAL SKILLS DEVELOPMENT PROGRAMS: DOCTORAL LEVEL

Y Attended 'Introduction to assessment and feedback for learning' at Imperial College London. Oct 2018

Attended 'Maximising your management skills 2: Time management for your doctorate' at Imperial College London.

Jan 2019

Attended 'Teaching 1: Introduction to Learning and Teaching' at Imperial College London.

Feb 2019 Attended 'President's Ph.D. Scholars Innovation lecture' at Imperial College London.

Attended 'Ensuring integrity I: Plagiarism awareness' at Imperial College London. Feb 2019

Attended 'Global post-graduate retreat: Teams, communication and observed interactions' at Imperial College London.

Feb 2019 Y Attended 'Writing for success 3: Literature review' at Imperial College London.

Mar 2019

COMMUNITY SERVICE

Y Member of an organization called 'Sharad Vichar Kranti Dal' which organizes blood donation camps, helps the underprivileged students by funding and educating them, helping people with physical and mental disabilities by fund raising events like sports 2009 - 2012

I have also volunteered in events organized this organization for HIV-AIDS awareness and fundraising for cancer patients.

2010 - 2012

Jan 2019