# CURRICULUM VITAE

**Dr. Hareesh (何玄)**

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## CAREER SUMMARY

I currently serve a Lecturer and a Postdoctoral Fellow in the Sino-US Global Logistics Institute, Antai College of Economics and Management, Shanghai Jiao Tong University, Shanghai, China. My research focus is in the area of intelligent digital supply chain management and sustainability. This focus extends from my doctoral investigation on an investigation of intelligent technology mining for the advanced industrial manufacturing domain. My prior research scope explored data-driven models for mining critical knowledge as essential technology components from 11,000+ technical documents across public database sources such as academic publications, global patents, standards, open source, and Application Programming Interface (API). The continuous exploration results had then led to several high impact academic publications generating more than a hundred citations during the course of the investigation and helped initiate various industry collaboration opportunities for our research group.

Detailed in the following sections are my demonstrated experience (academic, industrial, medical, and project management) towards technology orchestration (software, data, analytics, security, networking, etc.) with consideration to factors such as cost, intellectual property, global distribution, scaling, security, and continuous improvements. Further, I am a sitting member of various committees and undertake both teaching and administrative roles with departments and academic offices. I request you to consider having a look at my public GitHub profile for real-time discussions and feedback on explorations with engaged stakeholders.

## EDUCATION

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| 2015 – 2019 | National Tsing Hua University, Taiwan, **Ph.D.** |
| Doctorate | Thesis: Intelligent Technology Mining- An Industry 4.0 Application Study |
| | Major: Industrial Engineering and Engineering Management. |
| | Advisor: Prof. Amy J.C. Trappey. |
| | Co-Advisor: Prof. Charles V. Trappey. |
| 2013 – 2015 | Amity University Uttar Pradesh (AUUP), India, **M.Tech.** |
| Engineering Masters | Major: Computer Science and Engineering. |
| | Advisor: Prof. Sanjay Kumar Dubey. |
| 2009 – 2011 | University of Delhi, India, **M.Sc.** |
| Science Masters | Major: Informatics. |
| | Advisor: Prof. Sanjeev Singh. |
| 2005 – 2008 | Kuvempu University, India, **B.Sc.** |
| Bachelor's Degree | Major: Information Technology. |

## ACADEMIC POSITIONS

**Teaching**

2019 — **Adjunct Assistant Professor (Part-time)**, National Tsing Hua University
Currently, serving the position of Adjunct Assistant Professor in the Department of Industrial Engineering and Engineering Management. Teaching a course on Academic Writing during summer 2019 under the course code 10730IEEM580100. Details on prior taught courses (spring 2019) and courses under offering during fall 2019 listed in the attached teaching plan.

Summer 2018 — **Lecturer**, National Tsing Hua University
Served as a lecturer to teach a course on Data Structures to graduate students. The course was successfully completed under the course code 10630IEEM314000. The teaching evaluation for the course received a high score of 4.86 out of a maximum of 5. A detailed breakup of the evaluation can be obtained directly from the school's administrative office.

**Research**

2019 — **Postdoctoral Research Fellow**, Ministry of Science and Technology
Appointed as a Ministry of Science and Technology, Postdoctoral Research Fellow from Apr. 1, 2019 to Jul. 31, 2019. The goal of this fellowship is to convert a part of my doctoral thesis into an industry product to enable electrical transformer manufacturers in Taiwan. Electrical transformers are capital machinery and the global transformers market is expected to grow to $46.9 billion by 2020. Key drivers of the global growth are generation capacity additions to cater to increased electrification, high replacement rates in developed countries, and strict grid stability requirements owing to renewable energy. During the postdoctoral period, I will be in charge of creating an ecosystem of tools that enables automatic identification of requirements for a competitive outreach.

2016 – 2019 — **Research Assistant**, National Tsing Hua University
My work in the Enterprise Logistics and E-Business Center (ELEBC) laboratory, National Tsing Hua University involves data analytics, software project management, and coding in a host of programming languages. The projects are funded vide the Ministry of Science and Technology project 106-2218-E-007-012-MY2. The intelligence derived from our project algorithm helps in mapping essential technology components and key standards discussed in a huge corpus of technical documents. Further, the identified components are discussed as publications and customized for industrial problems to build a custom development stack which I manage to design, develop, and deliver as end-user solutions.

2014 — **Research Internship**, National Tsing Hua University
I was awarded GEL 2014 scholarship and joined the Department of Industrial Engineering at SIEM lab, NTHU as an intern. My primary work

during the internship was to determine the feasibility of creating a web-centric wrapper technology that would help distribute legacy scientific applications using software re-engineering concept.

**Affiliations**

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| 2019 ~ now | Reviewer for Business Strategy and The Environment (SSCI). |
| 2019 ~ now | Reviewer for The Journal of Enterprise Information Management (SSCI). |
| 2019 ~ now | Reviewer for IEEE Transactions on Engineering Management (SCI). |
| 2018 ~ now | Reviewer for The International Information Management Association. |
| 2017 ~ now | Reviewer for IEEE Transactions on Systems, Man, and Cybernetics (SCI). |
| 2016 ~ now | Reviewer for Advanced Engineering Informatics (SCI). |

## INDUSTRY EXPERIENCE

**Industry Projects**

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| 2019 | Immersive Technology for Aerospace Industry in the Context of Industry 4.0: Advanced Technology Transfer and Adoption (College of Engineering, National Tsing Hua University and Lockheed industrial collaboration project). |
| 2019 | Virtual Reality Exposure Therapy Study (Chang Gung Hospital, Taiwan). |
| 2019 | Intelligence for Competitive Advantage Study (Fortune Electric, Taiwan). |
| 2018 | Intelligent Conversational Technologies Specifications Analysis (Information Industry Council, Taiwan). |
| 2017 | Original Equipment Manufacturer International Branding Research (Taiwan Economic Research Institute TIER).<br>• Micro-Commerce Development for Products (Anchor Tech, Taiwan).<br>• Digital Markets Development for Services (Infinities Solutions, Taiwan). |
| 2015-2018 | Development of Unsupervised Machine Learning Approaches for Intellectual Property Analysis, (Ministry of Science and Technology, Taiwan). |

**Work Experience**

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| 2012 - 2013 | **Engineer**, Aricent Technologies (Acquired by French Altran)<br>Upon receiving a Master's degree in Science from Delhi University, I joined Aricent technologies in the role of an R&D Engineer. My work involved catering to Nokia Siemens Network, Finland in the RNC (Radio Network Controller) software research and development area. I worked with international engineering teams in the Agile development model to deliver RNC configuration management functionality with considerations to various service level parameters such as complexity, duplicity, warnings, memory leaks, and coverage. |
| 2010 - 2011 | **Internship Tenure**, Institute of Life Long Learning (ILLL)<br>During my Master degree at the University of Delhi South campus. I was selected for a one-year term tenure for the Delhi Universities E-learning |

initiative. My tenure involved providing support for visuals, animation, and video support to designated Professors towards the development of web-enabled courses. Further, I worked on the Moodle Course Management System (CMS) to distribute developed web content on the Delhi University portal for distribution across schools in India.

2009 **Associate**, WIPRO
Upon receiving a Bachelor's degree in Science, I joined WIPRO technologies. My role involved testing and debugging telecommunication networks deployed by Verizon Wireless, USA. I was further engaged in working with Structured Query Language (SQL) for generating complex queries according to client requirement.

## PUBLICATIONS

**Journals**

Trappey, A. J., Trappey, C. V., Govindarajan, U. H., & Sun, J. J. (2019). Patent Value Analysis Using Deep Learning Models - The Case of IoT Technology Mining for Manufacturing Industries. *IEEE Transactions on Engineering Management* (**Revision Under Review**).

Govindarajan, U. H., Trappey, A. J., & Trappey, C. V. (2019). Intelligent Collaborative Patent Mining Using Excessive Topic Generation. *Advanced Engineering Informatics*, Vol. 42, Online published:https://doi.org/10.1016/j.aei.2019.100955, (SCI, Impact Factor: 3.772).

Govindarajan, U. H., Sheu, D. D., & Mann, D. (2019). Review of Systematic Software Innovation Using TRIZ. *International Journal of Systematic Innovation*, vol. 5, pp. 72-90, ISSN: 2077-7973.

Trappey, A. J., Trappey, C. V., Govindarajan, U. H., & Jhuang, A. C. (2018). Construction and Validation of an Ontology-based Technology Function Matrix: Text Mining of Cyber Physical System Patent Portfolios. *World Patent Information,* vol. 55, pp. 19-24, (SNIP, Impact Factor: 1.159, Citation count: 3).

Govindarajan, U. H., Trappey, A. J., & Trappey, C. V. (2018). Immersive Technology for Human Centric Cyber Physical Systems in Complex Manufacturing Processes: A Comprehensive Overview of Global Patent Profile Using Collective Intelligence. *Complexity,* (SCI, Impact Factor: 2.591, Citation count: 9).

Trappey, A. J., Trappey, C. V., Govindarajan, U. H., Sun, J. J., & Chuang, A. C. (2016). A Review of Technology Standards and Patent Portfolios for Enabling Cyber-Physical Systems in Advanced Manufacturing. *IEEE Access*, vol. 4, pp. 7356-7382, (SCI, Impact Factor: 3.557, Citation count: 67).

Trappey, A. J., Trappey, C. V., Govindarajan, U. H., Chuang, A. C., & Sun, J. J. (2016). A Review of Essential Standards and Patent Landscapes for The Internet of Things: A Key Enabler for Industry 4.0. *Advanced Engineering Informatics*, vol. 33, pp. 208-229, (SCI, Impact Factor: 3.772, Citation count: 82).

## TALKS

### International Conferences

Trappey, A. J., Trappey, C. V., & Govindarajan, U. H. (2019). Knowledge Extraction of RfQ Engineering Documents for Smart Manufacturing. In *Proceedings of the 22nd International Conference on Advances in Materials & Processing Technologies,* Taipei, Taiwan (**Accepted**).

Hong, N. J., Govindarajan, U. H., & Trappey, A. J. (2019). Comprehensive Technology Function Product Matrix for Intelligent Chatbot Patent Mining. In *Proceedings of the 2019 IEEE International Conference on Systems, Man, and Cybernetics,* Bari, Italy.

Govindarajan, U. H., Trappey, A. J., & Trappey, C. V., (2019). 360° Technology as a Gateway for Immersive Psychotherapy Applications: An Intelligent Patent Mining Analysis. *15th International Conference on Data Science (ICDATA)*, Nevada, USA.

Govindarajan, U. H., Trappey, A. J., Trappey, C. V., Yeh, L. C., & Bafila, A. S. (2018). Excessive Topic Generation: A Pre-processing Method for Collective Intelligence and Relationship Mining. In *Proceedings of the 19th Asia Pacific Industrial Engineering & Management Systems Conference (APIEMS)*, Hong Kong, China.

Trappey, A. J., Trappey, C. V., Govindarajan, U. H., & Sharma, A. (2018). Conversational Service Bot Specifications for Advanced Manufacturing Applications. In *Proceedings of the 2018 IEEE International Conference on Advanced Manufacturing (ICAM),* Yunlin, Taiwan **[Best paper award]**.

Govindarajan, U. H., Trappey, A. J., & Trappey, C. V. (2018). Topics and Trends in Industrial Internet of Things (IIoT)- A 10 Year Patent Data Outlook. In *Proceedings of the 29th Annual Conference of the International Information Management Association (IIMA)*, Texas, USA.

Trappey, A. J., Trappey, C. V., Govindarajan, U. H., & Sun, J. J. (2018). Patent Quality Estimation Using Machine Learning – An Industrial Internet of Things Empirical Study. In *Proceedings of the 2018 International Symposium on Semiconductor Manufacturing Intelligence (ISMI)*, Hsinchu, Taiwan. **[Best paper award finalist].**

Trappey, A. J., Trappey, C. V., Govindarajan, U. H., & Gupta, A. (2017). OBM-centric Digital Marketing Development for High-tech Services – A Case Study. In *Proceedings of the 8th International Conference on Internet Technologies & Society (ITS)*, Sydney, Australia.

Govindarajan, U. H., Trappey, A. J., & Kumar, G. (2017). Latent Dirichlet Allocation modeling for CPS Patent Topic Discovery. In *Proceedings of the 1st International Conference on Industrial, Enterprise, and System Engineering (ICoIESE),* Bandung, Indonesia.

Jhuang, A. C., Sun, J. J., Trappey, A. J., Trappey, C. V., & Govindarajan, U. H. (2017). Computer Supported Technology Function Matrix Construction for Patent Data Analytics. In *Proceedings of the Computer Supported Cooperative Work in Design (CSCWD),* Wellington, New Zeland.

Govindarajan, U. H., Trappey, A. J., & Trappey, C. V. (2016). Investigating Technology and Patent Portfolio of Lens-Less Cameras in the Context of Industry 4.0. In *Proceedings of the 17th Asia Pacific Industrial Engineering & Management Systems Conference (APIEMS)*, Taipei, Taiwan. **[Best paper award finalist]**.

**Invited Lectures**

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| March 2019 | Intelligent Conversational Interface Applications, National Institute of Industrial Engineering. |
| Oct 2018 | Identifying Gaps in Product Continuum, Delhi University. |
| May 2018 | Analytics for Smart Future Business, National Sun Yat-Sen University. |
| Mar 2018 | Industry 4.0 Patent Analytics, National Chiao Tung University. |
| Dec 2017 | Digital Marketing Outline, National Chiao Tung University. |
| Aug 2016 | Lensless Camera Technology and Patents, University of Fiji. |

**Chaired Sessions**

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| August 2019 | Session Chair (Health Informatics & ApplicationsTrack), International Conference on Artificial Intelligence (ICAI 2019). |
| Dec 2018 | Session Chair (Artificial Intelligence Track), University of Hong Kong. |

**Trainings**

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| June 2019 | Virtual Reality Design Using Unity, National Tsing Hua University. |
| May 2019 | Excessive Topic Generation Trainer, National Tsing Hua University. |
| Oct 2018 | Web Protégé Trainer, National Tsing Hua University. |
| Apr 2018 | Patent Analytics Tools Trainer, National Tsing Hua University. |
| Jan 2018 | Information Technology Lab Training, National Tsing Hua University. |
| Jul 2016 | Information Technology Lab Training, National Tsing Hua University. |

## ENGAGEMENTS

**Infrastructure Management**

Designed python based compute server infrastructure for deploying our research groups explorations to stakeholders worldwide. An initial multi-CPU was built in 2016 which runs PHP using Apache for web distribution while invoking Python programs for analytics supports. Since our group's research exploration required real-time analytics support a multi-GPU architecture using NVIDIA CUDA technology was built in early 2018 (servers hyperlinked below). Further, an initial analysis for building Virtual Reality Exposure Therapy Applications in collaboration with the Department of Psychiatry, Chang Gung Memorial Hospital was started recently. This has led to the construction of a new Virtual Reality Distribution server for HTC VIVE in May 2019. The server is now under internal testing and will be commissioned for deployment shortly. The deployed infrastructure has been crucial in promoting our group's research and bringing in additional industrial projects.

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| 2019 | Virtual Reality Distribution for HTC VIVE Pro |
| 2018 | **PHP Invoked Python Multi CPU Sever.** |
| 2016 | **Django Multi GPU Server.** |

**Administrative Support**
Student internships and academic exchanges are great tools for accelerated learning. I am a regular contributor towards initiatives surrounding such activities both from management and administrative perspectives. The motivation is personal since I started my research career as an intern using one such initiative in the year 2014. Hence my continuous commitment to the school's administrative offices in all forms of internationalization-related work. Liaison with the College of Engineering office and the Division of Registration office towards current and incoming student support. Some key roles played in the previous years are as follows.

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| 2018 | Winter Research Coordinator, CoE, National Tsing Hua University. |
| 2018 | Summer Research Coordinator, CoE, National Tsing Hua University. |
| 2017 | Documentation Support, Registration, National Tsing Hua University. |
| 2016 | Internship Support, CoE, National Tsing Hua University. |

**Internship Guidance and Management**
Play project management role in the international internship program for our lab starting the year 2017 under the leadership of Prof. Amy Trappey. The program takes in undergraduate students every year from top schools worldwide towards fully funded interdisciplinary research. I managed the complete internship lifecycle starting with application screening, interviews, international approval paperwork follow-up, accommodations, internship project management, reporting, result publications, and intern exist.

**Social Outreach**
Created Intellectual Property for Entrepreneurship community in 2017 to bring together engineers and legal professionals and engage in open discussions. Trending inventions are discussed with considerations to IP perspectives through cycles of creation, protection, promotion, and propagation.

## HONORS AND AWARDS (PARTIAL 2014~2019)

2019 **Outstanding Conference Proceeding Paper Award**
Awarded prize money and certification for the university level outstanding conference proceeding paper for work in the are of intelligence conversational technology.

2019 **Certificate of Appreciation**
Awarded the National Tsing Hua University, College of Engineering, certificate of appreciation for continuous effort towards internship programs since 2017.

2018 **Best Paper Award**
IEEE best paper award in Proceedings of the 2018 IEEE International Conference on Advanced Manufacturing (ICAM), Yunlin, Taiwan.

2018 **Ministry of Science and Technology, Travel Grant**

29th Annual Conference of the International Information Management Association (IIMA), Houston, TX, USA.

2018 **Best Paper Award Finalist**
Awarded in Proceedings of the 2018 International Symposium on Semiconductor Manufacturing Intelligence (ISMI), Hsinchu, Taiwan.

2017 **Ministry of Science and Technology, Travel Grant**
International Conference on Industrial, Enterprise, and System Engineering (ICoIESE), Bandung, Indonesia.

2016 **Best Paper Award Finalist**
Awarded in Proceedings of the 17th Asia Pacific Industrial Engineering & Management Systems Conference (APIEMS), Taipei, Taiwan.

2015 **Shri. Baljit Shastri Award**
Recipient of the prestigious award for overall excellence in Engineering.

2014 **NTHU Global Research Internship Scholarship**
Awarded scholarship to carry out an international internship at NTHU, Taiwan.

## REFERENCES

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