Magesh Chandramouli
Professor, Computer Graphics Tech., Purdue University NW
Fellow, Software Sustainability Institute
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Professional Experience

- Professor, Purdue University Northwest, USA | 2021 - current |
  Enhanced research appointment: Purdue FERAP | 2024 - 2025 |
  (Faculty Enhanced Research Appointment Program)

- Fellow, Software Sustainability Institute | 2023 - current |
  International Fellow, SSI (UK)

- Director of Programs, EDGD/American Society of Engineering Education | 2019 - 2022 |
  Engineering Design Graphics Division (EDGD/ASEE)

- Associate Professor, Purdue University NW, USA | 2017- 2021|
  Computer Graphics Technology

- Assistant Professor, Purdue University NW, USA | 2011 - 2017 |
  Computer Graphics Technology

- Frederick Andrews Fellow, Purdue University, USA | 2008 - 2011 |
  Doctoral student on Frederick Andrews Fellowship
  Envision Center for Data Perceptualization

- Game Development & Programming Instructor, Purdue University | 2010, 2013 |
  Gifted Education Research Institute (Summer)

- Graduate Assistant, University of Calgary, Canada | 2005 - 2007 |
  Research Assistant, Schulich School of Engineering

- Systems Engineer, GIS Research Center, Taiwan | 2003 - 2005 |
  3D modeling-Taipei Cyber City, 3D animation/simulation

- Research Assistant, National University of Singapore | 2000 - 2003 |

Education

- Purdue University (Computer Graphics) , USA GPA: 4.0/ 4.0 | 2008 - 2011 | Ph.D.
  Thesis : A GA-Enabled VR Framework for 3D Interior Space Configurations

- University of Calgary, Canada (Geomatics Engg.) GPA: 3.7/ 4.0 | 2005 - 2007 | M.S.
  Thesis : GA-Based Optimization & Visualization to Solve Land use Problems

- National University of Singapore (Civil Engg.) Master's by Research | 2000 - 2003 | M.Eng.
  Thesis : Using 3D Visualization to construct a Road Inventory database

- Anna University, India (GeoInformatics) GPA: 7.5/ 10 | 1995 - 1999 | B.E.
  College of Engineering (CEG), Guindy, Chennai

Honors & Awards

-Global Online Laboratory Consortium (GOLC) Award for VR/AR Environments (2nd Place) 2025
-NSF-European Research Council (NSF-ERC) Award: Collaboration with Poli. De Torino 2024
-Brightspace Innovation Grant Award (Brightspace / D2L Program) 2022
-Innovator Award for Outstanding Instruction Framework, NWI Society of Innovators 2020
-University Outstanding Scholar Award, Purdue University Northwest 2020
-Third Prize, HousTex International 3D Design Competition 2019
-Warner Professional Practice Award, International Honor Society for Technology 2018
-Outstanding Keynote Lecture Award, National Center for High-Perf. Computing, Taiwan 2019
-Editor's Award: Outstanding Technical Paper, EDG/Am. Soc. for Engg Education, ASEE 2016
-Outstanding Faculty for Undergraduate Education Award 2016
-Outstanding Achievement in Sponsored Programs Award 2014
-Outstanding Grad Student Award, Computer Graphics Technology, Purdue University 2010
-Frederick Andrews Fellowship, Purdue University, West Lafayette 2008
-Graduate Special Award, Schulich School of Engineering, Univ. of Calgary, Canada 2006
-Best Employee Award, GIS Research Center, Taichung, Taiwan 2004

National/International Engagement

-Reviewer, National Science Foundation (NSF)
-Panelist, DoD/NDSEG (National Defense Science & Engineering Graduate) Evaluation Panel
-Panelist, NSF National Graphics Concept Inventory Project
-Panelist, American Society of Engineering Education Transformation Team
-Developer, National TEAMS Competition, based on National Academy of Engineering
-Panelist, Nature of engineering for K-12 education Project
-Keynote Speeches:
  -International Federation for Information Processing (IFIP-ICCIDS, India, 2025)
  -Intrapraevent Conference Virtual Reality for Disaster Mitigation (Taiwan, 2023)
  -Indian Institute of Technology, Dhanbad, Vikshit Bharat (India, 2025)
  -National M-STEM conference, Materials in STEM education (Virginia, USA , 2019)

Visiting Faculty

-Visiting Faculty, Politecnico de Turino, Italy 2024
-Visiting Faculty, Indian Institute of Technology, Madras (AMTDC, IITM) 2023
-Distinguished Visiting Faculty, Feng Chia University, Taiwan 2020
-Visiting Faculty, Duy Tan University, Vietnam 2019
-Visiting Faculty, Singapore University of Technology & Design (SUTD, Singapore) 2016

Journals, Reviews, Research & Scientific Advisory Boards

- Keynote speaker Moderator, Chair, Workshop organizer and presenter at many major conferences including ASEE, IEEE, & various other national/international events
- Technical Program Committee-ICVARS – Virtual & Augmented Reality Conference, UK
- Executive Board, International Association of Journals & Conferences, USA
- Scientific Advisory Board, Singularity & Infinity, Data Science Company
- Reviewer, Editorial Board, & Invited Reviewer for: Taylor and Francis Publications, Journal of Engineering Technology, American Society of Engineering Education, Journal of Intelligent Manufacturing, American Society of Photogrammetry & Remote Sensing, International Journal of Geographic Information Science; Journal of Hypermedia and Multimedia, Reviewed more than 50 articles for ASEE, IEEE, and other national conferences.

Research Summary

- Faculty Enhanced Research Appointment (FERAP), Purdue University
- Outstanding Achievement in Sponsored Programs Award from Purdue
- Offered professional development workshops to high school & university faculty in 6 states
- Innovator Award for Multimodal VR Framework received from Society of Innovators
- VR Training framework recognized with GOLC award for intuitive UI/HCI VR/AR framework
- Purdue Patent office filed # 70457-01 US Non-Provisional application (skipping provisional stage)
- NSF-MANEUVER project quoted in Wohler's report twice
- Received recognition from *International Honor Society for Technology in 3 Categories*
  Warner Professional Practice Award
  Graduate Award
  Mini-lectureship Award

Research Funding: Funded Grant Awards

Agency/Title of Grant: National Science Foundation (NSF)
PFI-TT: Virtual Reality Training for Active Pharmaceutical Ingredient Manufacturing Operations
Award #2213939; Amount: $ 249,998; Duration: 2022-2025; Role: Principal Investigator

Agency/Title of Grant: National Science Foundation (NSF)
REU Supplement: Research Experience for Undergraduates – Mentoring undergraduates in Research
Award #2436959; Amount: $ 16,000; Duration: 2024-2025; Role: Principal Investigator

Agency/Title of Grant: National Science Foundation (NSF)
GOALI: Grant Opportunities for Academic Liaison with Industry (Industry Partner: AbbVie Inc.)
Award #2317528; Amount: $ 49,593; Duration: 2023-2025; Role: Principal Investigator

Agency/Title of Grant: National Science Foundation (NSF)
NSF-APEX: Allowable Patent Expenses for non-provisional U.S. Patent (Application Sub. by Purdue)
Award #2409493; Amount: $ 26,901; Duration: 2023-2024; Role: Principal Investigator

Agency/Title of Grant: Brightspace Innovation Grant
D2L Brightspace Innovation Award: LMS for Mastery-Oriented Approach
Amount: $ 12,000; Duration: 2022-2023 ; Role: Principal Investigator

Agency/Title of Grant: European Research Council/ National Science Foundation (ERC/NSF)
Collaboration on Virtual Reality application in Aerospace & Aeronautical Engineering
Award# 2434118; Amount: $ 5,410; Duration: 2023-2024; Role: Principal Investigator
Host Institution in Europe: Politecnico de Turino, Italy

Agency/Title of Grant: AbbVie Inc.
Title: Virtual Reality Training for BioPharma Operations & Specialized Process Equipment
Amount: $7,000; Duration: 2019-2020; Role: Principal Investigator

* *Information included only for past 10 years (2015-2025); does not include pre-2015 grants*

Research Funding & Grant Awards

Agency/Title of Grant: *National Science Foundation (NSF)*
NSF-ATE: MANEUVER: Manufacturing Education Using Virtual Environment Resources
Award #1700674; Amount: $ 881,425; Duration: 2017-2022 Role: Principal Investigator;

Agency/Title of Grant: National Science Foundation (NSF)
NSF-IUSE: SSTAR- Enhancing Students' Spatial Skills with Augmented Reality Experiences
Award #2315646; Amount: $ 400,000; Duration: 2023-2026; Role: Co- Investigator;

Agency/Title of Grant: *Engineering Information Foundation (EIF)*
Strengthening Communication in Engineering Education using Virtual & Augmented Reality Experiences
Award#EIF41001099; Amount: $ 24,894; Duration: 2022-2023; Role: Principal Investigator;

Agency/Title of Grant: *Precision Metal forming Association*
VR/AR training for Precision metal-forming and specialized manufacturing training
Amount: $ 7,000 Duration: 2022-2023 Role: Principal Investigator;

Agency/Title of Grant: *MIT Innovation* Grant
SMART – Singapore MIT Applied Research & Technology grant for Collaborative research
Award #ING1611118-ICT; Amount: $ 246,880; Duration: 2016-2018 Role: Co- Investigator;

Agency/Title of Grant: *Strategic Joint Research Fund*
Development of an intuitive interactive platform for pre-operative communication
Award #SJRF 2015-3; Amount: $ 49,880; Duration: 2015-17 Role: Co- Investigator;

Agency/Title of Grant: *MSC Software Corporation*
Graphics Software Grant/ 3D modeling for CGT labs
Amount: $ 14,500; Duration: 2016-2018 Role: Principal Investigator

***Agency/Title of Grant*:** *NASA/Indiana Space Grant (INSGC*)
Programming Skills: Teachers to Young Students
Amount: $ 5,000 Duration: 2015-2017 Role: Co- Investigator;

Agency/Title of Grant: *Purdue Research Foundation & other internal grants*
(*Received multiple times 2011-2025*)
Catalyst Grant, Collaborative Grant, Exploratory Grant, Faculty Engagement Grant, Multiple research awards for graduate, undergraduate student research mentoring

Agency/Title of Grant: *ETD/American Society for Engineering Education*
Computational Thinking Skills using Desktop Virtual Reality Role: Principal Investigator
Amount: $ 4,000; Duration: 2015;

** Information included only for past 10 years (2015-2025); does not include pre-2015 grants*

Teaching Summary

- Consistent average 4 & above (out of 5) teaching evaluation on courses since 2011
- Taught sixteen (16) different courses from 100 level to 600 level courses including VR, Game programming, Animation, Advanced Animation, Graphics (developed 4 new courses)
- Outstanding Undergraduate Teaching Award
- Special commendation from Seelio© for mentoring 100+ students in digital portfolio creation
- Mentored and led University Team: Won 3rd Prize in the HousTex International 3D competition
- Mentored 25+ undergraduate research award recipients
- Graduate Committees (Chair/ member) : 14 Master's, 3 Doctoral Committees
- Teaching Incentive Program Award, Purdue University NW
- Teaching Innovation Grant Award, Purdue University NW
- Recognition from International Association of Online Engineering through GOLC Award for outstanding Virtual & Augmented Reality Environments for Training and Education

Engagement & Service

- Served as Director of Programs, Engineering Design Graphics Division
  American Society for Engineering Education (2019-2022)

- Served/Serving as reviewer/panelist/speaker on multiple National/International research, engineering, STEM organizations including:
  National Science Foundation (NSF), DoD/NDSEG, ETD, ICVARS, IAJC, SSI, & others
- Selected as one of the 6 international fellows of Software Sustainability Institute (UK)
- Contributed to dissemination of Open-source VR software
  - Organized international panels involving industry and academic professionals from Asia, US, & Australia to promote sustainable VR and open-source practices globally
  - Offered VR/AR workshops for several hundred faculty and students at:
    Politecnico de Torino, Italy; Royal University of Bhutan;
    Technological Institute of Philippines; Shiv Nadar University, India;
    Feng Chia University, Taiwan; Chinese University of Hong Kong;
    Indian Institute of Technology, Madras; National University of Singapore

Industry Engagement

- NSF ICorps Certification

Collaborated with many industries for "applied research" & internships:

- Quanser Inc. (VR in Robotics)
- Seelio (Keypath) Student Portfolio Creation
- Innovative 3D Manufacturing (VR in manufacturing)
- Precision Metal-forming Association (VR in manufacturing)
- AbbVie Inc. (VR in Biotech/BioPharma)
- MSC Software (VR Simulation & Visualization)
- Confederation of Indian Industry (CII, India)

Websites

https://spextra-nsf.org/
https://xreal-xperienz.org/
https://nsf-maneuver.org/
https://sites.google.com/view/mageshc-portfolio/home
pnw.edu/people/magesh-chandramouli/
software.ac.uk/fellowship-programme/magesh-chandramouli

Books

1. **Chandramouli, M.** (2021) Taylor & Francis publishers, 3D Modeling & Animation, Taylor & Francis, ISBN 9781498764919*
2. **Chandramouli, M.** (2015) Introduction to Animation, Purdue University Press/ Skyepack, ISBN 9781626710245
3. **Chandramouli,** M., Chou, T-Y., & Chung, L.K. (2007). An Introduction to Visualization for Absolute Beginners. FCU Press. ISBN: 9789867621603

** Ranked in Top 100 in Amazon under Rendering and Raytracing*

Book-Chapters

1. Patil, S. M., Choudhary, S., Kholova, J., **Chandramouli, M.,** & Jagarlapudi, A. (2024). Applications of UAVs: Image-based plant phenotyping. In Digital Agriculture: A Solution for Sustainable Food and Nutritional Security (pp. 341-367). Cham: Springer International Publishing.
2. **Chandramouli, M.,** & Huang, B. (2012). Virtual Environments for Geospatial Applications, Methods, and Issues. Chapter in Encyclopedia of GeoInformatics, Karimi, H. A., (Ed.), Idea Group.
3. Huang, B., & **Chandramouli, M.** (2009). Spatial-temporal Object Modeling. Chapter in Encyclopedia of GeoInformatics, Karimi, H. A., (Ed.), Idea Group, 2007 ISBN 1591409950

Selected Journal Articles & Refereed Conference Proceedings

Chandramouli, M., Nere, N., Shimpi, N., & Williams, A. (*Accepted*). Multimodal Virtual Reality & Digital Twin-based training for Specialized Process Equipment in Biotech/Biopharma Manufacturing : Proceedings of the 9th International Conference on Intelligent Computing and *Virtual & Augmented Reality Simulations*, Birmingham, UK (IEEE)

Williams, A., & **Chandramouli, M.** (*Accepted*). Virtual Reality(VR)-based Training Tool for positive reinforcement & communication in Autistic children: Proc. of the 9th International Conference on Intelligent Computing and *Virtual & Augmented Reality Simulations*, Birmingham, UK (IEEE)

Chandramouli, M., & Williams, A. (Accepted). Affordable virtual and augmented reality training modules for workforce development and smart manufacturing. Journal of Manufacturing Engineering, 19(4), 101-107. View the Article

Chandramouli, M. (2025, March). Work-in-Progress: VR/AR Interactive. In Futureproofing Engineering Education for Global Responsibility: Proceedings of the 27th International Conference on Interactive Collaborative Learning (ICL2024), Volume 2 (Vol. 1261, p. 97). Springer Nature.

Chandramouli, M., & Williams, A. (2024). Affordable virtual and augmented reality training modules for workforce development and smart manufacturing. Journal of Manufacturing Engineering, 19(4), 101-107. View the Article

Cubillos, D., & **Chandramouli, M.** (2025). Design and implementation of virtual reality instructional tools for 3D printing processes in digital manufacturing. Journal of Intelligent Manufacturing and Special Equipment.

Granizo, J. F., Acevedo, L. M., **Chandramouli, M.,** Chew, K. J., & Sun, L. (2024, June). Board 385: Spatial Skills with Augmented Reality: The Journey of Integration. In 2024 ASEE Annual Conference & Exposition.

Chandramouli, M. (2024, September). Work-in-Progress: VR/AR Interactive Framework to Enhance Communication in Engineering Education. In International Conference on Interactive Collaborative Learning (pp. 97-107). Cham: Springer Nature Switzerland.

Chandramouli, M., & Aryal, G. (2024). Design and Evaluation of MOOC Videos in LMS (Learning Management Systems) For Promoting Student Engagement and Active Learning. In ICERI2024 Proceedings (pp. 8686-8694). IATED.

Patil, S. M., Henke, M., **Chandramouli, M.,** & Jagarlapudi, A. (2023). Role of Virtual Plants in Digital Agriculture. In Digital Ecosystem for Innovation in Agriculture (pp. 157-182). Singapore: Springer Nature Singapore.

Frisky, A. Z. K., Putri, D. U. K., **Chandramouli, M.,** Divaldy, D. Z., Rafsanjani, R., Dharmawan, A., & Harjoko, A. (2023). Low-Cost Dome for Multi-Purpose Digitalization on Small Object. ICIC Express Letters, Part B: Applications, 14(9), 889-897.

Chandramouli, M. (2022, September). Using MOOCs in LMS for Mastery-Oriented Approach. In 2022 IEEE Learning with MOOCS (LWMOOCS) (pp. 233-237). IEEE.

Williams, A., & **Chandramouli, M.** (2021, July). Augmented Reality-based Graphics Application to Assist Children with Autism Spectrum Disorder. In 2021 ASEE Virtual Annual Conference Content Access.

Shirey, K. L., & **Chandramouli, M.** (2021, July). Work in Progress Pilot Study: Virtual Reality for Computational Thinking Foundations and STEM Enrichment. In 2021 ASEE Virtual Annual Conference Content Access.

Puri, V., **Chandramouli, M.,** Van Le, C., & Hoa, T. H. (2020, March). Internet of Things and Fuzzy logic-based hybrid approach for the Prediction of Smart Farming System. In 2020 International Conference on Computer Science, Engineering and Applications (ICCSEA) (pp. 1-5). IEEE.

Chandramouli, M., Jin, G., & Cubillos, D. (2019, October). MOOC Videos in Project MANEUVER. In 2019 IEEE Learning with MOOCS (LWMOOCS) (pp. 84-89). IEEE.

Chandramouli, M., & Hixon, E. (2019, June). Integrating Active/Collaborative Learning in Computer-Centered Course Curriculum. In 2019 ASEE Annual Conference & Exposition

Chandramouli, M. (2019, June). Desktop and Augmented VR for Delivering Materials for Graphics Modeling and Animation Courses. In 2019 ASEE Annual Conference & Exposition.

Chandramouli, M., Jin, G., Heffron, J., Cossette, M., Fidan, I., Merrell, W., Welsch, C. (2018) Virtual Reality Education Modules for Digital Manufacturing Instruction, ASEE Annual Conference proceedings

Fraley J., Imeri A., Fidan I., **Chandramouli M.** (2018) A Comparative Study on Affordable Photogrammetry Tools. ASEE Annual Conference proceedings

Chandramouli, M., Lei, E., Chou, T-Y., & Raju, S. (2016) Desktop Virtual Reality & iSpace for GIS Education through Interactive Virtual Learning Environments, Computers in Education JOURNAL. 7 (3), 91-104.

Chandramouli, M., & Chittamuru, S. T. (2016). Web-Compatible Graphics Visualization Framework for Online Instruction and Assessment of Hardware Concepts. Engineering Design Graphics Journal,80(3).

Jin, G., & **Chandramouli, M.** (2016) Development of Casual 2D Game Laboratory Exercises in Introductory Computer Graphics Programming Course. Technology Interface International Journal. 16(1),19-25.

Chou, T-Y., Hoang, T. V., **Chandramouli, M.,** Yeh, M-Ling. (2016) Integrating Agriculture Model into WebGIS: Case Study in Red River Delta, Vietnam. Intl Jl. of Research in Agricultural Sciences. 3(4), 2348 – 3997

Chandramouli, M., & Bertoline G. R. (2014). A genetic algorithm-based optimization framework to visualize, evaluate and modify 3D space configurations in desktop VR. Intl. Journal for Simulation & Multi- Objective Design Optimization. Vol. (5) No.2. 36-47

Chandramouli, M., Narayanan, B., & Bertoline, G. R. (2014). A Graphics Design Framework to Visualize Multi- Dimensional Economic Datasets. Engineering Design Graphics Journal. 77(3): 1- 14

Chandramouli, M. and Chittamuru, S.T. (2016) May. A prototype graphics framework for interactive instruction of computer hardware concepts. In 2016 IEEE International Conference on Electro Information Technology(EIT) (pp. 0281- 0286). IEEE.

Chandramouli, M., Lei, E., Chou, T-Y., & Raju, S. (2016) Prototype Design of GIS Virtual Learning Environments for Interactive Visualization using Desktop Virtual Reality (VR) & iSpace, Proceedings of the American Society of Engineering Education Conference, New Orleans, LA

Chandramouli, M., Reid, P., & Zywicki, C. (2016) E-Texts as Low-Cost Alternative Instructional Media in Computer Graphics Education: One Instructor's Journey, Proceedings of the International Conference on Engineering and Technology Education, Salvador, Brazil

Chandramouli, M., & Heffron, J. (2015). A Desktop VR-based HCI framework for programming instruction. Integrated STEM Education Conference, 2015 IEEE (pp. 129-134)

Chandramouli, M., Zahraee, M. and Winer, C., 2014, June. A fun-learning approach to programming: An adaptive Virtual Reality (VR) platform to teach programming to engineering students. In IEEE Intl. Conference on Electro/Information Technology (pp.581- 586). IEEE.

Chandramouli, M., & Heffron, J. (2015) Enhancing Programming Skills of Engineering and Technology Students Using an Object-Oriented Multidimensional Desktop Virtual Reality(dVR) Framework, Conference for Industry& Education Collaboration(CIEC/ASEE), CA

Chandramouli, M., Takahashi, & Bertoline, G. R. (2014) Desktop VR Centered PBL in ET Courses Using a Low- cost Portable VR System, Proceedings of the ASEE, IN

Chandramouli, M., Elbadwi A.Q. I., Ziller, M., El Ashmawy, M. A., Zahraee, M. (2014) Underwater Remotely Operated Vehicle Manufacturing Assembly and Training Using X3D/ Virtual Reality Modeling Language, Proc. of Annual Conference of Intl. Association of Journals & Conferences, Orlando, FL

Jin, G. & **Chandramouli, M.,** (2014) Development of Casual 2D Game Laboratory Exercises in Introductory Computer Graphics Programming Course, Proceedings of the Annual Conference of the International Assoc. of Journals & Conferences, Orlando, FL

Chandramouli, M., Bertoline, G., Elbadwi A.Q. I. (2014) Geometry and Graphics for Developing a Multimodal Multidimensional Desktop Virtual Reality framework, Proceedings of the Annual Conference of the International Association of Journals & Conferences, Orlando, FL

Chandramouli, M., & Bertoline, G. (2013) A Review of Multi-Objective Design Optimization and the Use of Genetic Algorithms Interior Design Optimization. International Journal of Engineering Research & Innovation. 5(1), 33-40.

Chandramouli, M., Jin, G., Connolly, P. (2012). An Innovative Teaching Initiative using Processing© Open-Source Language for Graphics in First Year Engineering and Technology Courses. The Technology Interface International Journal 13(1), 52-61. ISSN: 1523-9926.

Chandramouli, M., Huang, B., & Xue, L. (2009). Spatial change optimization: Integrating GA with visualization for 3D scenario generation. Photogrammetric Engg. & Remote Sensing, 75(8): 1005-1023.

Chandramouli, M., Bertoline, R., & Connolly, P. (2009). Generating Alternative Engineering Design by Integrating Desktop VR with Genetic Algorithms. Engineering Design Graphics Journal, 73 (3): 1 -12

Huang, B., Liu, N., **Chandramouli, M.** (2006). GIS Supported Ant Algorithm for Linear Feature Covering Problem with Distance Constraints. Decision Support Systems, 42(2): 1063-1075.

Liu, N., Huang, B., & **Chandramouli, M.** (2006). Optimal Siting of Fire Stations using GIS and Ant Algorithm. Journal of Computing in Civil Engineering, 20 (5): 361-369

Huang, B., Li, H. G., & **Chandramouli, M.** (2004). Real-time environmental visualization with Web3D. Transportation Research Record,(1899): 181-187