

Harish Ram Nambiappan

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Arlington, Texas - 76013, USA

RESEARCH SUMMARY

Computer Scientist with a PhD in Computer Science and current experience as a volunteer researcher, specializing in IoT based human computer interaction and human robot interaction. My research integrates concepts from various areas such as Internet of Things (IoT), Edge Computing, Deep Learning, Machine Learning, Computer Vision and Robotics along with developing mobile smartphone applications. I am committed to advancing impactful, high-quality research while actively contributing to collaborative, interdisciplinary environments. My work bridges theory and application, with a strong commitment to impactful, interdisciplinary research and academic mentorship.

EDUCATION

• The University of Texas at Arlington <i>PhD in Computer Science (Advisor: Dr. Fillia Makedon, Dr. Nicholas Gans)</i>	<i>August 2019 - December 2024</i> Arlington, TX, USA
◦ Thesis Dissertation Title: <i>A Unified Cross-Modal Interactive System for Assisting Vision Impaired in Human Navigation and Indoor based Human Robot Interaction</i>	
• The University of Texas at Arlington <i>MS in Computer Science</i>	<i>January 2016 - December 2017</i> Arlington, TX, USA
• College of Engineering, Guindy - Anna University <i>BE in Computer Science and Engineering</i>	<i>August 2010 - December 2014</i> Chennai, India

RESEARCH EXPERIENCE

• Automation and Intelligent Systems Lab, UT Arlington Research Institute <i>Volunteer Researcher (Supervisor: Dr. Nicholas Gans)</i>	<i>January 2025 - Present</i> Fort Worth, TX
• The University of Texas at Arlington <i>Graduate Research Assistant (Supervisor: Dr. Nicholas Gans)</i>	<i>January 2024 - December 2024</i> Arlington, TX
• Automation and Intelligent Systems Lab, UT Arlington Research Institute <i>Research Assistant (Supervisor: Dr. Nicholas Gans)</i>	<i>January 2021 - August 2023</i> Fort Worth, TX
• Heracleia Human-Centered Computing Lab, The University of Texas at Arlington <i>Graduate Research Assistant (Supervisor: Dr. Fillia Makedon)</i>	<i>August 2020 - December 2020</i> Arlington, TX
• Automation and Intelligent Systems Lab, UT Arlington Research Institute <i>Research Assistant (Supervisor: Dr. Nicholas Gans)</i>	<i>June 2020 - August 2020</i> Fort Worth, TX

TEACHING EXPERIENCE

• The University of Texas at Arlington <i>Graduate Teaching Assistant</i>	<i>Arlington, TX</i>
◦ CSE 5315 - Numerical Methods (Supervisor: Dr. Nicholas Gans) - Fall 2023	
◦ CSE 5369/CSE 6369 - Special Topics in Advanced Intelligent Systems (Supervisor: Dr. Fillia Makedon) - Fall 2020	
◦ CSE 5322 - Software Design Patterns (Supervisor: Dr. David Kung) - Fall 2019, Spring 2020	
◦ CSE 1320 - Intermediate Programming (Supervisor: Dr. Sajib Datta) - Fall 2017	

HONORS AND AWARDS

• Program Committee Member for PETRA 2026 Conference <i>Included for the upcoming PETRA 2026 Conference</i>	<i>August 2025</i>
• Summer 2024 Dissertation Fellowship <i>Awarded during Summer 2024</i>	<i>June 2024</i>
• Best Student Paper Award Runner Up <i>Awarded in ACM PETRA'24 Conference</i>	<i>June 2024</i>
• Best Paper Award <i>Awarded by MDPI Technologies Journal</i>	<i>March 2023</i>
• Best PhD Lightning Talk Runner-Up <i>Awarded in UTA Student Computing Research Festival 2023 (SCRF'2023)</i>	<i>February 2023</i>
• Student Travel Grant <i>Awarded during ACM MobiSys'2022 Conference</i>	<i>June 2022</i>
• Best Poster Paper Award <i>Awarded in ACM PETRA'21 Conference</i>	<i>July 2021</i>

- **Best Hardware Hack Sponsored by Digi-Key** February 2021
Awarded by MLH during the "CUhackit 2021" hackathon
- **Graduate L3/Harris Award for Innovation from L3/Harris** April 2020
Awarded in UTA College of Engineering Innovation Day 2020
- **NSF PETRA Conference Doctoral Consortium Award** June 2018
Awarded during ACM PETRA'18 Conference

RESEARCH PROJECTS

- **Assistive Intelligent Smartcane for Vision Impaired Navigation** January 2025 - Present
Leading the project team as a Volunteer Researcher and mentoring undergraduate students
 - Working and leading the project on developing an assistive intelligent smartcane that can assist vision impaired in avoiding collision during navigation
 - Smartcane is being developed to implement both vision based object detection and depth estimation and is designed to avoid both static and dynamic moving objects in the navigation path
- **Multimodal AR-IoT based Human Robotic Interactive System for Robotic Teleoperation** January 2025 - Present
Leading the project team as a Volunteer Researcher and mentoring PhD students
 - Leading the project on building an AR-IoT based Human Robot Interactive System that can enable humans to remotely teleoperate mobile robots and robotic arm in complex environments
 - The system enables humans to interact with the robots through a mobile-AR application and can teleoperate the robots using speech and hand gesture commands
- **Human Robot Interactive System for Mutual Human Robot Collision Avoidance** January 2025 - Present
Leading the project team as a Volunteer Researcher and mentoring PhD students
 - Working and leading the project on developing an Human Robot Interactive System that can enable humans and mobile robot interact with each other and perform mutual collision avoidance in a manufacturing scenario
 - System combines robotic visual servoing with vision based human pose classification and hand sign detection to perform mutual human robot collision avoidance
- **Cross-Modal Interactive System for Human Navigation and Human Robot Interaction** August 2023 - December 2024
PhD Thesis Dissertation Research
 - Worked on developing a multimodal interactive system for assisting vision impaired people in both human navigation and indoor based human robot interaction
 - Published papers in conferences like **ACM UIST'24** and **ACM MobiCom'24**
- **PFI:BIC: iWork (Award Number - 1719031)** August 2019 - August 2023
Funded by National Science Foundation (NSF) and mentored undergraduate students
 - Worked on the NSF Funded project as a PhD student from 2019 to 2023. Focused on the integration of Internet of Things with Speech Recognition and Robotics to develop human robot interactive systems
 - Published papers in conferences like **IEEE RO-MAN 2020** and **ACM MobiSys'22**

PUBLICATIONS

Journal Papers

- [1] Enamul Karim, Hamza Reza Pavel, Sama Nikanfar, Aref Hebri, Ayon Roy, **Harish Ram Nambiappan**, Ashish Jaiswal, Glenn R. Wylie, and Fillia Makedon. "Examining the Landscape of Cognitive Fatigue Detection: A Comprehensive Survey". *Technologies* 12, no. 3 (2024): 38.
- [2] **Harish Ram Nambiappan**, Stephanie Arevalo Arboleda, Cody Lee Lundberg, Maria Kyrarini, Fillia Makedon, and Nicholas Gans. "MINA: A Robotic Assistant for Hospital Fetching Tasks". *Technologies* 10, no. 2 (2022): 41.
- [3] Maria Kyrarini, Fotios Lygerakis, Akilesh Rajavenkatanarayanan, Christos Sevastopoulos, **Harish Ram Nambiappan**, Kodur Krishna Chaitanya, Ashwin Ramesh Babu, Joanne Mathew, and Fillia Makedon. "A Survey of Robots in Healthcare". *Technologies* 9, no. 1 (2021): 8. **[Best Paper Award]**
- [4] Sanika Doolani, Callen Wessels, Varun Kanal, Christos Sevastopoulos, Ashish Jaiswal, **Harish Ram Nambiappan**, and Fillia Makedon. "A Review of Extended Reality (XR) Technologies for Manufacturing Training". *Technologies* 8, no. 4 (2020): 77.

Conference Papers

- [1] Sama Nikanfar, Aref Hebri, **Harish Ram Nambiappan**, Gaurav Nale, Mahfuza Siddiqua, Farnaz Farhanipad, and Fillia Makedon. "A Survey on Assistive Technologies for Visually Impaired Individuals: Recent Innovations, Limitations, and Future Directions." In *Proceedings of the 18th ACM International Conference on PErvasive Technologies Related to Assistive Environments (ACM PETRA '25)*, pp. 429-434. 2025.
- [2] **Harish Ram Nambiappan**, Sneh Acharya and Fillia Makedon. "Multimodal Smartphone based IoT Framework for Assisting People with Disabilities in SLAM based Human Robot Interaction". In *Proceedings of the 30th Annual International Conference on Mobile Computing and Networking (ACM MobiCom '24)*, pp. 1680-1682. 2024.
- [3] **Harish Ram Nambiappan**, and Fillia Makedon. "Development and Evaluation of Collision Avoidance User Interface for Assistive Vision Impaired Navigation". In *Adjunct Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology (ACM UIST '24)*, pp. 1-3. 2024.
- [4] **Harish Ram Nambiappan**, Sama Nikanfar, Ayon Roy, Joey Hussain, Deep Shinglot, Sneh Acharya, Nicholas Gans, and Fillia Makedon. "Human-Robot Interactive System for Warehouses using Speech SLAM and Deep Learning-based Barcode Recognition". In *Proceedings of the 17th International Conference on PErvasive Technologies Related to Assistive Environments (ACM PETRA '24)*, pp. 38-44. 2024. **[Best Student Paper Award Runner Up]**
- [5] Enamul Karim, **Harish Ram Nambiappan**, Sneh Acharya, and Fillia Makedon. "Remote Operated Human Robot Interactive System using Hand Gestures for Persons with Disabilities". In *Proceedings of the 16th International Conference on PErvasive Technologies Related to Assistive Environments (ACM PETRA '23)*, pp. 137-139. 2023.
- [6] **Harish Ram Nambiappan**, Enamul Karim, Md Jillur Rahman Saurav, Anushka Srivastav, Nicholas Gans, and Fillia Makedon. "Smartphone Based IoT-Controller Framework for Assisting the Blind in Human Robot Interaction". In *Proceedings of the 15th International Conference on PErvasive Technologies Related to Assistive Environments (ACM PETRA '22)*, pp. 514-516. 2022.
- [7] **Harish Ram Nambiappan**, Enamul Karim, Jillur Rahman Saurav, Anushka Srivastav, and Fillia Makedon. "Edge-IoT framework for speech and mobile-based human-robot interaction". In *Proceedings of the 20th Annual International Conference on Mobile Systems, Applications and Services (ACM MobiSys '22)*, pp. 527-528. 2022.
- [8] **Harish Ram Nambiappan**, Krishna Chaitanya Kodur, Maria Kyrrarini, Fillia Makedon, and Nicholas Gans. "MINA: A Multitasking Intelligent Nurse Aid Robot". In *Proceedings of the 14th PErvasive Technologies Related to Assistive Environments Conference (ACM PETRA '21)*, pp. 266-267. 2021. **[Best Poster Paper Award]**
- [9] Akilesh Rajavenkatanarayanan, **Harish Ram Nambiappan**, Maria Kyrrarini, and Fillia Makedon. "Towards a Real-Time Cognitive Load Assessment System for Industrial Human-Robot Cooperation". In *The 29th IEEE International Conference on Robot and Human Interactive Communication (IEEE RO-MAN 2020)*, pp. 698-705. 2020.
- [10] Farnaz Farahanipad, **Harish Ram Nambiappan**, Ashish Jaiswal, Maria Kyrrarini, and Fillia Makedon. "HAND-REHA: Dynamic Hand Gesture Recognition for Game-based Wrist Rehabilitation". In *Proceedings of the 13th ACM International Conference on PErvasive Technologies Related to Assistive Environments (ACM PETRA '20)*, pp. 1-9. 2020.
- [11] Varun Kanal, James Brady, **Harish Ram Nambiappan**, Maria Kyrrarini, Glenn Wylie, and Fillia Makedon. "Towards a serious game based human-robot framework for fatigue assessment". In *Proceedings of the 13th ACM International Conference on PErvasive Technologies Related to Assistive Environments (ACM PETRA '20)*, pp. 1-6. 2020.
- [12] **Harish Ram Nambiappan** and Sajib Datta. "PISS-IoT: Person Identification and Spotting System in an Internet-of-Things Way". In *Proceedings of the 11th PErvasive Technologies Related to Assistive Environments Conference (ACM PETRA '18)*, pp. 83-90. 2018.

SKILLS

- **Programming Languages:** Java, C, C++, Python, Android Programming
- **Data Science, Machine Learning & Deep Learning:** Pandas, Numpy, Scikit-Learn, PyTorch
- **Networking Protocols & Tools:** TCP/IP Protocol, UDP Protocol, MQTT Protocol, Wireshark
- **Database Systems:** MySQL (SQL), MongoDB (NoSQL), Firebase (NoSQL), MariaDB (SQL)
- **Cloud Technologies:** Amazon AWS S3, Amazon AWS DynamoDB
- **Robotics Tools & Technologies:** ROS (Robot Operating System), Gazebo, RVIZ, MoveIt
- **Other Tools & Technologies:** Android Studio (Smartphone Application Programming), Unity (Mobile AR/VR Applications), Blender (Mobile AR/VR, Gaming Design)

PROFESSIONAL REFERENCES

CANDIDATE NAME - HARISH RAM NAMBIAPPAN

NAMES AND CONTACT EMAIL OF REFERENCES:

REFERENCE 1:

PROF. FILLIA MAKEDON

Jenkins-Garrett Professor

Department of Computer Science and Engineering, The University of Texas at Arlington
500 UTA Blvd
Arlington, TX 76010
makedon@uta.edu

REFERENCE 2:

DR. NICHOLAS GANS

Principal Research Scientist, Division Head for UTARI's Automation & Intelligent Systems Division
University of Texas at Arlington Research Institute (UTARI)
7300 Jack Newell Boulevard South
Fort Worth, TX 76118
nick.gans@uta.edu

REFERENCE 3:

DR. MING LI

Associate Professor

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Arlington, TX 76010
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10/05/2025

Selection Committee

Department of Computer Science

Texas A&M University–Corpus Christi

6300 Ocean Drive

Corpus Christi, TX 78412

Dear Members of the Selection Committee,

I am writing to express my strong and sincere interest in the Assistant Professor position in the Department of Computer Science at Texas A&M University–Corpus Christi. With a strong research background in Internet of Things (IoT), Edge Computing and Robotics, and a passion for both innovative research and student-centered teaching, I am excited about the opportunity to contribute to your department's mission of academic excellence and community engagement.

I completed my PhD in Computer Science at The University of Texas at Arlington where my research primarily focused on developing human computer interaction systems and human robot interaction systems to augment human capabilities in various environments and scenarios. This research requires an interdisciplinary approach which involves integrating concepts from areas such as Internet of Things, Edge Computing, Deep Learning, Machine Learning, Computer Vision and Robotics along with developing smartphone mobile applications. My research work has resulted in publications in conferences such as IEEE RO-MAN 2020, ACM MobiSys'22, ACM UIST'24 and ACM MobiCom'24. I am particularly interested in continuing this research while fostering interdisciplinary collaboration, which I understand is highly valued at Texas A&M–Corpus Christi.

In addition to my research experience, I also have teaching experience by working as a graduate teaching assistant for various faculties in courses such as Intermediate Programming, Software Design Patterns, Human Computer Interaction and Numerical Methods. My duty as a graduate teaching assistant involves teaching undergraduate and graduate students and guiding them in developing real-world applications during their coursework. I have also mentored undergraduate and graduate students as part of my research work and collaborated with them in research projects which has led to research publications in international conferences. I consistently strive to create inclusive, engaging environments that support diverse learners. I strongly believe in fostering an inclusive and interactive learning environment, and I prioritize

making difficult concepts accessible through hands-on exercises, collaborative group work, and real-world applications.

I am drawn to Texas A&M–Corpus Christi for its commitment to serving a diverse student population, its emerging research profile, and its location that fosters strong ties with regional industry and community partners. I am especially interested in contributing to the university and department's goal to enrich student educational experience and enhance student success through research and scholarly activity by encouraging students to take part in independent research and collaborative group projects.

I have enclosed my curriculum vitae, research and teaching statements. I would welcome the opportunity to discuss how my research background, experience and goals align with your department's vision. Thank you for considering my application.

Sincerely,
Harish Ram Nambiappan
harishram.nambiappan@gmail.com
<https://www.linkedin.com/in/harishramnambiappan/>

Northwestern

Dear Search Committee Members,

I am writing to apply for the tenure-track position in Computer Science at Texas A&M University - Corpus Christi. I am completing my Ph.D. in Computer Science at Northwestern University (expected 2026) under the supervision of Prof. Xiao Wang. My experience in teaching across course levels and in research of cryptography and security aligns with Texas A&M University - Corpus Christi's commitment to high-impact research excellence, undergraduate and graduate education, and interdisciplinary environment. I am confident I can contribute meaningful value to your institution.

My research centers on cryptography and security, spanning both cryptographic problems and interdisciplinary challenges. I design new cryptographic primitives and apply them to real-world challenges such as private set intersection and distributed network security. My publications include first-authored papers at **ACM CCS 2024** (in collaboration with **Google**) and **ACM CCS 2025**, as well as articles in leading journals such as *IEEE Network*, *IEEE Communications Magazine*, and *IEEE TDSC*.

My teaching experience spans from introductory to advanced levels, as well as mentorship and formal pedagogy training. I am a **co-instructor** for *Introduction to Cryptography* at *Northwestern* and has delivered **guest lectures** for the same course at *University of Illinois Urbana-Champaign* as well as for *Advanced Topics in Cryptography* at *Northwestern*. In addition, I have pursued formal **pedagogy training**, where I developed skills in inclusive course design, active-learning facilitation, and student-centered reflection.

I am applying to Texas A&M University - Corpus Christi because of its commitment to fostering dynamic learning vitality, truth-seeking scholarship, and uplifting academic environment, core values that align with my own academic philosophy. I am also drawn to the location in Corpus Christi, offering a quiet academic setting. I look forward to continuing my experience by bringing excellent teaching practices, a high-impact research agenda, and a commitment to mentoring and service to the department. I have included my CV, teaching statement, research statement, and references as requested, and I appreciate your consideration of my application.

Sincerely,

Yunqing Sun

Yunqing Sun