Unnikrishnan R

Research Associate

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Experience

2015   **Visiting Researcher**, *CHILI Labs*, École Polytechnique Fédérale de Lausanne.
Developed augmented reality game to teach efficient packing strategies in planning woodcuts.

2010–   **Research Associate**, *AMMACHI Labs*, Amrita Vishwa Vidyapeetham.
Projects:
- **Computational thinking *[2015]***
  - Developed a board game to teach computational concepts and an associated computer game for introducing programming to children from rural India.
- **Village development *[2015]***
  - Conducted digital literacy classes and sanitation awareness campaigns, assisted women in constructing toilets, documented local music and medical knowhow in the villages of Nani Borwai (Gujarat), Pandori (Jammu) and Indpur (Himachal).
- **Rebar bending trainer *[2014]***
  - Developed real time mesh deformation graphics, virtual learning environment and user interface (ongoing).
- **Balance training system *[2013]***
  - Developed software for the Amrita Balance training system (AMBA) and designed serious games to help patients with balance impairments regain balance.
- **Virtual motorcycle assembly trainer *[2013]***
  - Gesture interaction using the Leap motion sensor & zSpace virtual holographic display for interactive labeling and assembly operations.
- **Interactive Art Installation *[2013-]***
  - Developed computer vision based software to identify user interaction with a water fountain and dynamically rendered music based on the interaction patterns.
- **Jigsaw simulator with passive haptic feedback *[2012]***
  - Developed computer vision based prototype passive haptic feedback system 'MUSHAK' for simulating a Jigsaw tool.
- **Visuo-haptic simulators for APTAH and CHAKRA haptic devices *[2010-2014]***
  - Developed haptic feedback enabled training simulation software for drillpress and tablesaw machines and file, hand plane & ratchet tools.

2009–2010   **Student Intern**, *AMMACHI Labs*, Amrita Vishwa Vidyapeetham.
Made a prototype for a haptic wood carving simulator using the Falcon haptic device and the Chai3D library. I also developed a constructive solid geometry based drilling simulator.

Education

2007–2010   **Master in Computer Applications**, *Amrita School of Engineering*, Amritapuri, *CGPA: 8.0 out of 10.0* .

2004–2007   **BSc in Computer Science**, *Amrita School of Arts and Sciences*, Amritapuri, *CGPA: 8.78 out of 10.0* .

Technical skills

Programming	C, C++, C#, Java.	Haptics	Chai3D, H3DAPI.
IDEs	Visual Studio, Eclipse, Netbeans.	Electronics	Arduino.
Graphics	Unity3D, OpenGL, IRRLicht, Processing.	Web	Javascript, PHP.
Sound Generation	Puredata.	Motion Tracking	Kinect SDK, Leap SDK, 3Gear SDK.

Volunteering

2011–	Volunteered for various Amala Bharatham (Clean India) Campaign clean up drives in Sabarimala, Kerala.
2004–	Volunteered for Mata Amritanandamayi Devi's birthday celebrations for many years serving in crowd control, food serving etc.
2004–	Volunteered to help in the execution of various international conferences held at Amritapuri.
2004–2010	Volunteered to help in the organizing and execution of various techfests and college festivals.

Publications

- B Bhavani, Srividya Sheshadri, R Unnikrishnan, "Vocational education technology: Rural India", Proceedings of the 1st Amrita ACM-W Celebration on Women in Computing in India, September 2010
- R. Unnikrishnan, K. Moawad, Rao R. Bhavani, "A Physiotherapy toolkit using motion tracking and haptic devices", IEEE Global Humanitarian Conference 2013, India, 2013.
- N. Akshay, S. Deepu, E. S. Rahul, R. Ranjith, J. Jose, R. Unnikrishnan, Rao R. Bhavani, "Design and Evaluation of a Haptic Simulator for Vocational Skill Training and Assessment", 39th Annual Conference of the IEEE Industrial Electronics Society, Vienna, 2013.
- Ranjith, R., Nagarajan Akshay, R. Unnikrishnan, and Rao R. Bhavani. "Do It Yourself Educational Kits for Vocational Education and Training." In Proceedings of the 2014 International Conference on Interdisciplinary Advances in Applied Computing, p. 40. ACM, 2014
- Jose, James, R. Unnikrishnan, Delmar Marshall, and Rao R. Bhavani. "Haptic simulations for training plumbing skills." In Haptic, Audio and Visual Environments and Games (HAVE), 2014 IEEE International Symposium on, pp. 65-70. IEEE, 2014.
- R. Unnikrishnan, N. Amrita, Alexander Muir, and Bhavani Rao. "Of Elephants and Nested Loops: How to Introduce Computing to Youth in Rural India." In Proceedings of the The 15th International Conference on Interaction Design and Children, pp. 137-146. ACM, 2016.