


# Hemanth Kandula

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EDUCATION	<b>SASTRA Deemed University, Thanjavur, India</b> <i>B.Tech</i> in Electronics and communication Engineering <b>Bachelor Thesis:</b> Portable Internet-of-Things enabled rapid semen analysis system. Jul 2014—Jul 2018
RESEARCH INTERESTS	Machine Learning, Robotics, Embedded systems, Healthcare
RESEARCH EXPERIENCES	<b>Shafiee Lab, Brigham and Women's Hospital, Harvard Medical School</b> <i>Research Assistant</i> <b>Supervisor:</b> Hadi Shafiee, PhD Dec 2017—Present <ul style="list-style-type: none"><li>• <b>Deep neural networks in embryology for human embryo developmental fate prediction and quality assessment</b> Trained neural network on various architectures to produce high accuracy on assessment of embryos. Assisted in developing portable imaging system and built an android application for embryo developmental fate prediction</li><li>• <b>A low-cost smartphone-based device for point-of-care ovulation testing</b> Trained a neural network to predict the ovulation with 99 percent accuracy and embedded neural network model into a smartphone app.</li><li>• <b>Portable Internet-of-Things enabled rapid semen analysis system</b> Developed an algorithm for tracking sperm cells and calculating sperm sample motility and concentration to analyze male fertility.</li><li>• <b>Phoneme classification with Bidirectional LSTM (ongoing)</b> Trained a Bidirectional long short term memory (LSTM) network architecture combined with CTC for phoneme recognition on TIMIT dataset</li><li>• <b>Male fertility prediction based on Sperm Morphology (ongoing)</b> Developed an android application for clinical data annotating and for calculating male fertility with a point of care device.</li></ul> <b>Electric Vehicle Engineering and Robotics (EVER) Lab, SASTRA University</b> <i>Undergraduate Research Assistant</i> <b>Supervisor:</b> Manigandan .N.S, PhD May 2016—Nov 2017 <ul style="list-style-type: none"><li>• <b>Autonomous indoor navigation of unmanned ground vehicle (Corobot):</b> Worked on indoor autonomous navigation of corobot implementing Simultaneous localization and mapping( SLAM) in ROS with scene segmentation by real-time semantic segmentation (SegNet: Deep Neural Network Architecture )</li><li>• <b>Stabilization and control of unmanned quadcopter</b> Built an unmanned quadcopter from the ground up and implemented control for a better stability and point to point autonomous navigation with GPS</li></ul>
PUBLICATIONS	<p>[i] Potluri V*, P S Kathiresan*, <b>H Kandula</b>, P Thirumalaraju, MK Kanakasabapathy, SKS Pavan, D Yarravarapu, A Soundarrajan, K Baskar, R Gupta, N Gudipati, JC Petrozza and H Shafiee, "An inexpensive smartphone-based device for point-of-care ovulation testing." <b>Lab on a Chip</b>. (featured as cover) DOI:<a href="https://doi.org/10.1039/C8LC00792F">10.1039/C8LC00792F</a></p> <p>[ii] Kanakasabapathy MK*, P Thirumalaraju*, CL Bormann*, R Gupta, R Pooniwalla, <b>H Kandula</b>, I Souter, I Dimitriadis, V Yogesh, SKS Pavan, D Yarravarapu, LB Ramirez, CL Curchoe, JE Swain, LM Boehnlein and H Shafiee, "Deep neural networks in embryology for human embryo developmental fate prediction and quality assessment." <b>Science Translational Medicine</b>. (In review)</p>

ACHIEVEMENTS	<b>Massachusetts Institute of Technology</b> , Grand Prize 2st Place Award at MakeMIT	2018
	<b>Indian Institute of Technology-Madras</b> , 2nd place in ELECKART, SHAASTRA-17	2017
	<b>SASTRA University</b> , 1st place GAUNTLET, DAKSH'17	2017
	<b>National Institute of technology-Trichy</b> , Pragyan Overall Championship, Pragyan'17	2017
	<b>Indian Institute of Technology-Madras</b> , Finalists in Aero's got Talent, SHAASTRA-17	2017
PROJECTS	<ul style="list-style-type: none"> <li>• <b>IoT enabled automated Mari-culture system:</b> (Funded by Texas Instruments and Department of Science and Technology, India) ) A system that continuously monitors the shrimp farm and stores the data collected from sensors to the cloud and predicts the requirements of oxygen and food for shrimps.</li> <li>• <b>Gesture Controlled Quad-Rotor</b> Quad-copter whose flight motion is controlled with the help of a gesture object. Here the mobile phone is used as a gesture object. This is been done with quad-copter and also simulated in ROS.</li> <li>• <b>Autonomous Mobile Robot</b> Made an autonomous bot to navigate point to point (start to destination) in a high way by detecting the center of lanes and following them on the road. Control for this system is implemented a Image feedback is used to determine the path of the robot.</li> <li>• <b>Recognition-based writing Robot using character segmentation</b> The robot is trained with characters by Machine Learning algorithm (kNN) and recognizes from the video input. RR manipulator with 2 DOF used to write.</li> </ul>	
	<b>Android Application Projects:</b>	
	<ul style="list-style-type: none"> <li>• <b>Kuruksastra17 , KSOrganizer</b> Participants and Organizers apps for inter college Fest <i>Kuruksastra'17</i></li> <li>• <b>Spoof My Location</b> Built mod for PokémonGo app where user can change his GPS location [Xposed Module]</li> <li>• <b>Carpe'16</b> Organizer app for intra-college Cultural Fest <i>Carpedium'16</i></li> <li>• <b>Quad Web, Quad Tilt</b> Control Quad-copter with a hand gesture or android phone</li> </ul>	
ADDITIONAL ACTIVITIES	Project coordinator at Robotics club, SASTRA University	Jul 2016—Oct 2017
	Volunteer in National Service Scheme, SASTRA University	Jan 2016—Oct 2017
	App developer at 300dpi, Design team, SASTRA University	Aug 2016—Nov 2017
	Organized Open Learning program (OLP) on Robotics, SASTRA University	Aug 2015 & Aug 2016
SKILLS	<b>Programming Languages:</b> Python, Java, C/C++, MATLAB, Linux bash	
	<b>Machine learning Libraries:</b> TensorFlow, Keras	
	<b>Robotics Platforms:</b> Robot Operating System	
	<b>Web Frameworks:</b> Vue.js, Angular, PHP, SQL, Django	
	<b>Application Platforms:</b> Android Studio, XCode	