

# Elizabeth Vargas

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CONTACT INFORMATION	Ocean Systems Laboratory Earl Mountbatten G.06 Heriot-Watt University Edinburgh, United Kingdom	Website: <a href="https://evargasv.github.io/">https://evargasv.github.io/</a> Email: <a href="mailto:elizabeth.vargas@hw.ac.uk">elizabeth.vargas@hw.ac.uk</a> LinkedIn: <a href="https://www.linkedin.com/in/evargasv/">https://www.linkedin.com/in/evargasv/</a> Portfolio: <a href="https://github.com/evargasv">https://github.com/evargasv</a>
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PROFESSIONAL EXPERIENCE	<b>ORCA Hub</b> <i>Research Associate</i>	Jan. 2019 - Present Edinburgh, United Kingdom
	<ul style="list-style-type: none"><li>• Computer vision applied to Offshore Robotics for Certification of Assets (ORCA).</li><li>• Deployment of a real-time vision system for surveying and inspection of structures.</li><li>• Simultaneous Localisation And Mapping (SLAM) in underwater environments.</li><li>• Sensor Fusion of Visual Odometry (VO) with acoustic and inertial sensors (<i>ROS</i>).</li></ul>	

	<b>Toshiba Medical Visualization Systems</b> <i>Research Intern</i>	Jun. 2015 - Sep. 2015 Edinburgh, United Kingdom
	<ul style="list-style-type: none"><li>• Alzheimer disease characterisation using Magnetic Resonance Imaging (MRI).</li><li>• Texture analysis in hippocampus tissue to diagnose the disease at various stages.</li><li>• Combination of brain gyrus segmentation with regional texture metrics.</li><li>• Performed feature selection, classification and regression (<i>Python, Scikit-learn</i>).</li></ul>	

	<b>Siemens Healthcare</b> <i>Innovation Think Tank Participant</i>	Feb. 2012 - Apr. 2012 Erlangen, Germany
	<ul style="list-style-type: none"><li>• Selected in a group of 20, among 256 students around the world, to participate in interdisciplinary projects proposed and supervised by Siemens Healthcare experts.</li><li>• Investigation of the effects of technological advances on current healthcare systems.</li><li>• Lead a project that concluded in a new design for ultrasound catheter markers.</li></ul>	

	<b>Philips Research Aachen</b> <i>Research Intern</i>	Mar. 2011 - Jul. 2011 Aachen, Germany
	<ul style="list-style-type: none"><li>• Magnetic Resonance Imaging (MRI) applied to characterisation of liver diseases.</li><li>• Features extraction from Diffusion Weighted MRI relevant for disease diagnosis.</li><li>• Implementation of a gray level based iterative segmentation algorithm employing threshold derived from histogram analysis (<i>MATLAB</i>).</li></ul>	

EDUCATION	<b>Ph.D. Signal Processing</b> <i>Heriot-Watt University, United Kingdom</i>	Oct. 2015 - Sep. 2019
	<ul style="list-style-type: none"><li>• Acoustic source localisation in environments in which a constraint is present.</li><li>• Source localisation via direct optimisation reducing computation six fold (<i>SciPy</i>).</li><li>• Signal sampling implementation in the spectrogram for compressed transmissions.</li><li>• Improved neural networks training for acoustic localisation (<i>Keras, TensorFlow</i>).</li></ul>	

	<b>M.Sc. Computer Vision and Robotics with Distinction</b> <i>University of Burgundy, France</i>	Sep. 2013 - Jun. 2015
	<ul style="list-style-type: none"><li>• Joint Erasmus Mundus Master Program with <i>University of Burgundy</i> (France), <i>University of Girona</i> (Spain) and <i>Heriot-Watt University</i> (United Kingdom).</li><li>• Basis of signal and image processing, medical image analysis (<i>MATLAB</i>).</li><li>• Image segmentation, multi-view geometry, object recognition and tracking (<i>OpenCV</i>).</li><li>• Robot autonomy and intelligence, including SLAM and motion planning (<i>ROS</i>).</li></ul>	

**B.Sc. Computer Science**

Aug. 2006 - Aug. 2012

Universidad del Valle, Colombia

- Courses in algorithms, data structures, compilers and software engineering.
- Projects including image processing (*C/C++*), search algorithms, optimisation, evolutionary algorithms, software development (*Java*) and databases (*MySQL*).

**SELECTED PUBLICATIONS** **E. Vargas**, J. R. Hopgood, K. Brown, K. Subr, *A Compressed Encoding Scheme for Approximate TDOA Estimation*, in European Signal Processing Conference (**EU-SIPCO**), Rome, Italy, September 2018.

**E. Vargas**, K. Brown, K. Subr, *Impact of Microphone Array Configurations on Robust Indirect 3D Acoustic Source Localization*, in International Conference on Acoustics, Speech and Signal Processing (**ICASSP**), Calgary, Canada, April 2018.

**DISTINCTIONS** **James Watt Scholarship**, *Heriot-Watt University* Oct. 2015  
Granted to 5 applicants for a Ph.D. position at the School of Engineering and Physical Sciences (EPS), awarding tuition fees and annual stipend to support studies for 3 years.

**Erasmus Mundus Scholarship**, *European Commission* Sep. 2013  
Granted to 4 European students for academic and professional achievement to study a Master in Computer Vision and Robotics (ViBot) during the academic year 2013-2015.

**Young Engineers Scholarship**, *DAAD and Colciencias* Jul. 2010  
Scholarship granted to 5 engineering students from Universidad del Valle, on the basis of academic achievement and proficiency in English and German, to go abroad for a year.

**TRAINING** **International Summer School on Deep Learning** Jul. 2018  
Research training event aiming at updating participants about the most recent advances in the critical and fast developing area of deep learning.

**International Computer Vision Summer School (ICVSS)** Jul. 2016  
Provided an objective, clear, and in-depth summary of the state-of-the-art research in the areas of Computer Vision, Machine Learning and Artificial Intelligence.

**TECHNICAL SKILLS** **Operating Systems:** Windows, Linux (Ubuntu)  
**Programming Languages:** Python, C/C++  
**Robotics:** Robotics Operating System (ROS)  
**Computer Vision:** OpenCV  
**Machine Learning:** Scikit-learn  
**Software Tools:** MATLAB  
**Version Control:** Git/Github

**VOLUNTEER EXPERIENCE** **Edinburgh International Science Festival**, *Student Helper* 2017 - 2018  
Helper at the “*Marty: Activate!*” workshop that taught children (11+ years) to program a robot to interact with its surroundings using the programming language *Scratch*.

**FIRST LEGO League (FLL)**, *Robot Game Judge* 2016-2018  
Assess teams of young people (9-16 years) while solving a set of missions on a specialised field, using an autonomous robot built and programmed using LEGO MINDSTORMS

**Cracking the Code**, *Student Helper* Jun. 2017  
Introduce girls (9-11 years) to programming a robot using LEGO MINDSTORMS, as part of a Equality Challenge Units (ECU) project aimed at attracting under-represented groups into subjects they don’t traditionally apply for.