Brandeis University’s Graduate Professional Studies (GPS) is looking for an industry leader to develop and teach in our new Robotic Software Engineering Master’s Program. Brandeis University is consistently ranked among the nation’s top universities, and our online courses are developed using best practices in online learning. Information about Brandeis University and Graduate Professional Studies can be found online at www.Brandeis.edu/GPS.

**About the position:**
We are currently looking to hire an *adjunct instructor for RBOT 230: Robot Sensing and Perception.* This core course provides an Introduction to Computer Vision and AI and will teach students how to design perception algorithms that enable robots to perceive the world using sensor data. This role is ideal for a robotics industry professional looking to shape the future of their field and mentor the next generation of colleagues in the rapidly growing AI/Robotics fields.

**About the course:**
RBOT 230 – Robot Sensing and Perception is a core course in the Robotic Software Engineering Master’s Program. This course will provide an introduction to Computer Vision and AI, with several topics relevant to robotics such as SLAM, 3D Geometry, 3D Reconstruction, Object recognition, speech recognition, classification, RANSAC, etc. Students will connect to and use real sensors (2D, 3D) using common open frameworks.

At the end of the course, students will be able to:
- Design programmatic solutions for solving robot perception tasks (vision and speech)
- Implement and test the solutions using OpenCV and PCL
- Characterize the perception algorithm performance boundaries
- Discuss and analyze Open source Toolkits and Frameworks for building Perception systems

General topics to be covered include:
- Sensing - Image formation, camera geometry, camera calibration
- Low level vision - Image feature detection, connected components (2D/3D), 3D reconstruction
- Mid-level vision - Pose detection, Nearest neighbor methods, RANSAC, Iterative closest point, K-means
- High level vision - MRF, Graph cuts, Generative/Discriminative models, Pixel Segmentation, Object detection, semantic segmentation, Activity recognition, Tracking(Parametric/Non-parametric models, Kalman filters), SLAM, CNN

**Qualified candidates will have Subject Matter Qualifications in the following areas:**
- **Required:**
  - Current active employment in the Robotics Software Engineering field, or related industry
  - Minimum of 10 years' experience with computer vision/machine vision
  - Familiarity with image formation, camera calibration, image & semantic segmentation, tracking, graph methods, machine learning, and deep learning
  - Experience applying perception to robotics desired, but not required
Minimum of a master’s degree

Preferred:
- Understanding of ROS and its components (and tools such as rviz, gazebo, etc) desired but not required
- Teaching experience preferred; online teaching or learning experience preferred

General responsibilities include:
- For new courses requiring development:
  - Design a syllabus following program chair guidance and the syllabus template
  - Create content that aligns with course outcomes and offers the author’s experiences and perspectives on key points
- For all courses - develop and deliver the course according to our teaching standards, which include actively facilitating online discussions, providing relevant and timely feedback on student work, reporting grades, and discussing student issues with staff
- Create or refine and facilitate the course site in the Moodle learning management system

General skill requirements include:
- Strong interpersonal skills when relating to students
- The ability to communicate effectively in writing, including conveying complex information and promoting in-depth engagement on course topics
- The ability to devote adequate time to courses, including responding to students and providing meaningful feedback in a timely manner

About the Masters in Robotic Software Engineering Program:
From self-driving cars to farming to advances in healthcare and caretaking, nearly every global industry will be impacted by autonomous robots and the software that drives them. The Masters in Robotic Software Engineering will allow students to develop an advanced understanding of robotic engineering concepts and learn from leading software engineers and roboticists.

All GPS Masters courses are 10-weeks long and taught asynchronously in the online learning environment with no set days or times for interaction.

About GPS Faculty:
GPS Faculty instructors are active practitioners in the industries that align with our programs and have the professional expertise to bring to course discussions and threads. Instructors are part time and work fully online, with no requirement to appear on campus. Our faculty have earned at least a master's degree with many holding terminal academic degrees and industry-specific credentials. Previous experience teaching online is not required; GPS offers a comprehensive training program for qualified applicants.

How to apply:
GPS welcomes applications for its adjunct faculty pool on an ongoing basis. The application process consists of the online application and, if subject matter qualifications are met, a series of interviews at the discretion of the Program Chair and Director of Program Development. Complete your application online at http://www.brandeis.edu/gps/community/apply-to-teach.html.