

Honda Research Institute USA (HRI-US) strives to be at the cutting edge of Honda's research and development activities. Driven by Honda's global slogan - The Power of Dreams - we pursue emerging technologies and bring them into reality to make people happy by engaging daily in highly scientific, pioneering work. We realize that dreams don't come from organizations, systems, or money. They come from people, and we seek people who have such a challenging spirit to join us.

Currently, HRI-US (Silicon Valley) is offering research internships to highly motivated Ph.D. (and qualified M.S.) students. Interns will work closely with HRI researchers, and publishing results in academic forums is highly encouraged. We are looking for candidates with good publication track records and excellent programming skills to join our team!

How to Apply: Please send an e-mail to careers@honda-ri.com with the following:

- Subject line including the job number(s) you are applying for.
- Recent CV
- Topics you are interested in (optional).

Candidates must have the legal right to work in the U.S.A.

Human Behavior/State Understanding (Job Number: P18INT-01)

The title includes multiple positions which focus on developing computer vision, signal processing, and machine learning algorithms for human-vehicle interactions in traffic scenes. The candidate is expected to work on one of the following topics:

- Visual recognition and analysis of human action, gesture, intention, and spatial/contextual relations
- Forecast future trajectory of road users in traffic scenes and its reasoning
- Tactical driver action detection through temporal modeling and cross-modal embedding learning
- Modeling driver's situational awareness from scene saliency and driver gaze information
- Understanding human activities, intentions, and emotions using multimodal sensory input

Qualifications:

- Ph.D. /M.S. candidate in computer science, electrical engineering, or related field
- Strong research experience in computer vision and machine learning
- Hands-on experience in one or more of the following: human action recognition, activity recognition, trajectory forecast, temporal modeling
- Experience in open-source deep learning frameworks such as TensorFlow or PyTorch preferred
- Excellent programming skills in Python or C++

Computer Vision and Machine Learning in Traffic Scenes (Job Number: P18INT-02)

The title includes multiple positions which focus on developing computer vision and machine learning algorithms to capture the detailed semantics of 2D and/or 3D traffic scenes. The candidate is expected to work on one of the following topics:

- Segmentation, reconstruction, and interpretation through fusion of video and LiDAR point cloud data
- Explicit modeling of objects, their attributes, and relationships to other objects and the environment
- Higher level classification of dynamic traffic scenes including place, conditions, and environments

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- Representation and classification of atomic and complex actions of participants in traffic scenes for video captioning and retrieval
 - Vehicle attribute recognition for safe navigation including vehicle pose and turn signal status

Qualifications:

- Ph.D. /M.S. candidate in computer science, electrical engineering, or related field
- Strong familiarity with computer vision and machine learning techniques pertaining to scene understanding, image classification, and object detection
- Hands-on experience in one or more of the following: LiDAR processing, SLAM, sensor fusion, video captioning and retrieval, probabilistic graphical modeling
- Experience in open-source deep learning frameworks such as TensorFlow or PyTorch preferred
- Excellent programming skills in Python or C++
- Experience with Point Cloud Library (PCL), Robot Operating System (ROS), and GPU programming is a plus for some topics

Explainable AI (Job Number: P18INT-03)

The title includes multiple positions which focus on developing computer vision and machine learning algorithms to build DNN-based models explainable for human users in traffic scenes. The candidate is expected to work on one of the following topics:

- Incorporating driving domain knowledge such as rule compliant or enforcing models using on-road driving data
- Regularization of visual attention in a human-friendly manner and presenting textual explanations

Qualifications:

- Ph.D. /M.S. candidate in computer science, electrical engineering, or related field
- Strong familiarity with computer vision and machine learning techniques pertaining to XAI
- Experience in open-source deep learning frameworks such as TensorFlow or PyTorch preferred
- Excellent programming skills in Python

Human Machine Interface (Job Number: P18INT-04)

This internship position focuses on interface designs for AD and ADAS systems. The candidate is expected to work on developing a prototype HMI for level 3 automated vehicles and conducting a user study.

Qualification:

- Ph.D. /M.S. candidate in computer science, human computer interaction, human factor engineering or related field
- Strong familiarity and research experience in automotive HMI evaluation, user studies, interface design
- Excellent programming skills in Python or C++
- Experience in Unreal Engine preferred

Motion Planning / Decision Making (Job Number: P18INT-05)

This title includes multiple positions which focus on developing algorithms to advance research in motion planning and decision making. The candidate is expected to work on one of the following topics:

- Person following for non-holonomic vehicles on rugged terrain
- Design an algorithm that allows a robot to plan in uncertain environments
- Adaptive speed control to generate safe maneuvers to handle merging scenarios in dense traffic

- Adaptive steering control to handle merging scenarios in sparse traffic

Qualifications:

- Ph.D. /M.S. candidate in computer science, electrical engineering, or related field
 - Strong familiarity and research experience in some or more of the following: path planning, re-planning, anytime planning, SLAM, active learning, reinforcement learning, bandit problems
 - Experience in open-source deep learning frameworks such as TensorFlow or PyTorch preferred
 - Excellent programming skills in Python or C++
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Robotics: Manipulation (Job Number: P18INT-06)

This title includes multiple positions which focus on formulating and developing algorithms, and running experiments to advance research in robotics manipulation. The candidate is expected to work on one of the following topics:

- Robotics manipulation using tactile sensors in unstructured environments
- Robotics manipulation of deformable objects such as bed sheets and wire harnesses using deep reinforcement learning
- Developing algorithms that allow robots to manipulate objects cooperatively with humans using learning from demonstration techniques

Qualifications:

- Ph.D. or highly qualified M.S. candidate in computer science, electrical engineering, or related field
 - Experience in deep learning and other machine learning methods such as recurrent neural networks
 - Experience in the following is a plus for some topics: tactile sensing, manipulation, grasping, motion planning, real robots, or physics engine such as MuJoCo and Bullet
 - Good programming skills in either C++ or Python
 - Experience in Robot Operating System (ROS)
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Robotics: Physical Human-Robot Interaction (Job Number: P18INT-07)

This internship position focuses on formulating and developing algorithms, and running experiments of physical human-robot interaction (pHRI). The candidate is expected to work on one or more of the following topics:

- Interaction modeling from multimodal human motion data
- Human intention recognition from multimodal human motion data
- Design and implementation of pHRI tasks

Qualifications:

- Ph.D. /M.S. candidate in computer science, mechanical engineering, or related field
 - Experience in human motion analysis and modeling, human behavior recognition, or interaction design
 - Experience in setting up and running real robot experiments using ROS
 - Excellent programming skills in C++ or Python
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Robotics: Machine Learning for Navigation (Job Number: P18INT-08)

This internship position focuses on formulating and developing algorithms, and running experiments to advance research in the area of robotics navigation in human environments. The candidate is expected to work on one or more of the following topics:

- Design and implementation of generative models of crowd behavior (common examples might include LSTMs, GANs, stochastic processes, or RL) for robot navigation in human environments

- Develop and implement robot navigation software on various experimental platforms
- Participate in field studies of robot navigation in human crowds

Qualifications:

- Ph.D. candidate in computer science, electrical engineering, or related field
- Experience in human robot interaction, machine learning, and decision making under uncertainty
- Experience with robots in real environments using Robot Operating System (ROS), C++, or Python