Honeybee Robotics is a leader in advanced robotic systems for the worlds’ toughest environments on Earth and in space. Honeybee Robotics is dedicated to developing technology and products for next-generation advanced robotic and spacecraft systems that must operate in increasingly dynamic, unstructured and often hostile environments.

Honeybee’s Advanced Robotics Group seeks an entry/mid-level professional for the position of Robotics Software Engineer I/II, working with the Artificial Perception and Intelligent Systems Team in Brooklyn, NY.

Responsibilities:

- Develop and implement novel algorithms for advanced safety-critical robotic applications
- Contribute to overall robotics software architecture and roadmap decisions
- Evaluate and identify improvements to system designs with specific focus on robust autonomy
- Implement software development, test, and release tools and processes
- Interface with scientists, engineering managers, product management, and/or program management to drive new product development programs from concept to production
- Create technical documentation (e.g. specifications, hazards analysis, etc.) for complex systems
- Provide hands-on support to cross-functional product development teams serving markets including space, defense, medical, manufacturing, and other industries.

Requirements:

Education/Experience:

- US Person (Citizen or Permanent Resident)
- BS degree (MS preferred) in Robotics, Computer Science, Computer Engineering, Electrical Engineering or equivalent.

Required Base Qualifications:

- 2-6 years (or 0-6 years w/ MS) post-grad experience developing, delivering, and sustaining cyber-physical software applications
- 2+ years working with space, mobile, industrial, or medical robots
- 2+ years development with ROS and/or OROCOS
- Fundamental understanding of computer architectures, information representation, control flow, and memory management
- Development experience with robotic systems and theory (e.g. mechatronics, kinematics, dynamics, sensing, control, planning, etc.)
- C++ development on both non-realtime and realtime platforms
- Python development for rapid algorithm development and data analysis
- Development of distributed asynchronous and deterministic systems
- Fluency in distributed software version control with Git and modern distributed software development and collaboration workflows
- Software architecting, requirements management, configuration management, and verification & validation experience
- Strong communication skills including verbal, written, and interpersonal.
- Team player. Desire and energy to work in a fast-paced environment
- Strong ownership, passion, and a love for solving problems

We are seeking multiple additions to our team including a variety of potential areas of expertise. Please see the following page for Required Focus Areas. Applicants must have background in 1 or more areas. When applying, please designate the focus area category ID(s) that apply to your background and expertise.
Focus Categories – Designate Focus Category ID(s) in order of applicability in Application

<table>
<thead>
<tr>
<th>ID</th>
<th>Category</th>
<th>Qualifications and Experience</th>
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| A  | Machine Perception | • Fundamental understanding of sensing theory for optics, lasers, and acoustics  
• Lens, sensor, and illumination selection for passive and active vision  
• Thorough understanding of linear algebra and projective geometry  
• Processing 3D data such as depth images, RGB-D point clouds, and light-field images  
• Monocular and stereo vision registration and tracking algorithms  
• Image segmentation and feature extraction  
• Thorough understanding of sensor calibration algorithms and practical methods  
• Machine perception algorithms on resource-constrained computational platforms  
• 2+ years experience working with OpenCV, PCL, scikit-image, and other common machine perception toolchains  |
| B  | Localization | • 2+ years working with mobile robots in an academic or professional setting  
• Thorough understanding of Bayesian filtering principles  
• Design and implementation of process and observation models for parametric and non-parametric stochastic state estimation algorithms  
• Development and implementation of one or more SLAM methods  
| C  | Autonomous Planning & Control | • 2+ years experience developing controllers and/or motion planners on physical robotic systems with real sensor data  
• Development of task and/or temporal planning frameworks  
• Working with and designing motion planning algorithms for high-DoF robotic systems  
• Thorough understanding of open and closed-chain robot kinematics and dynamics  
• Thorough understanding of Linear Systems theory  
• Design of model-based and adaptive control algorithms  
| D  | Machine Learning | • Thorough understanding of conventional and deep learning algorithms  
• Implementation and training of machine learning algorithms with real data  
• Through understanding of nonlinear optimization algorithms  
• Reinforcement learning and simulation-based knowledge transfer  
• Development with common machine learning toolchains for CPU and GPU-accelerated algorithm training and evaluation (Tensorflow, Keras, Torch, etc.)  |
| E  | Physical Simulation & Visualization | • 2+ years working with real-time 3D dynamic simulations  
• Experience developing GPU-accelerated software for physical simulation and general computation (CUDA, Thrust, OpenMP, etc.)  
• Development of 3D graphics software with OpenGL and GLSL  
• Familiarity with the Gazebo simulation framework  
• Development of integrated AR / VR applications  |
| F  | Embedded Programming | • 2+ years developing software for “bare-metal” no-OS microprocessors  
• 4+ years ANSI C experience  
• Thorough understanding of causal digital signal processing methods  
• Experience interfacing with DC, stepper, and BLDC motor drivers  
• Analog data acquisition and filtering  
• Common microprocessor architectures (ARM, AVR, MSP430, etc)  
• Common embedded data interface busses (SPI, I2C, etc)  
| G  | Software Architecture | • Familiarity with the above categories and ability to easily interface with peers with focuses in the above categories and discuss requirements and performance characteristics  
• Development of large-scale data synchronization and information logging systems  
• GUI design, programming, and UX principles  
• Thorough understanding of network communication and distributed systems  
• Development with common middleware systems (ZMQ, DDS, CORBA, etc)  
• Familiarity with numerous low-level communication busses and protocols, and device driver development (USB, Serial, CAN, PCI, ModBus, EtherCAT, PC-104, etc.),  
• Familiarity with industrial robot safety standards (e.g., ISO/TS 15066)  
• Familiarity with medical device software standards (e.g., IEC 62304)  |

TO APPLY following instructions at: [https://www.honeybeerobotics.com/about-us/careers/](https://www.honeybeerobotics.com/about-us/careers/)

Honeybee Robotics, Ltd. is an Equal Opportunity Employer (EOE). Qualified applicants are considered for employment without regard to race, religion, color, sex, age, disability, sexual orientation, genetic information, national origin, or veteran status.