



Software Engineer - Back End Developer

The BrainGate brain-computer interface (BCI) research team at Brown University is seeking an enthusiastic, highly skilled and innovative Software Engineer / Back-End Developer to contribute to a fast-paced engineering project that will define the future of brain-implantable neural interface technology to improve communication and independence for people with severe motor disabilities. This is a 1-year full-time contract position embedded on site with our team in the School of Engineering at Brown University in Providence, RI.

Primary Responsibilities:

- Architect and implement software to integrate information flow among multiple devices and data streams throughout the brain-computer interface platform
- Define and implement client-side and server-side software components with low-latency, real-time data flow capabilities
- Collaborate with team engineers, clinicians and neuroscientists to help architect device communication protocols and system integration approaches to provide management and control of the entire multi-device real-time system
- Work closely with front-end UI/UX developer to
 - develop software and data structures to manage, store, and update system status and configuration information and communicate these across system devices
 - enable low-latency browser-based graphing of high-bandwidth streaming data
- Work closely with research engineers to create software components to communicate streaming data between existing Matlab, Simulink and QNX/ARM real-time software and applications in Windows, MacOS, iOS and/or Android
- Design, implement and execute verification tests for software modules and systems
- Clearly and effectively communicate design processes, ideas and solutions to all stakeholders
- Introduce and implement best practices & processes for coding & design
- Write exceptional, well-documented modular code supportable and extensible by both experts and support staff
- Support and integrate a small body of existing in-house real-time C/C++ software

Required Skills:

- BS or MS degree in Computer Science, Computer/Electrical Engineering or related field
- Demonstrated professional programming experience and portfolio across a variety of platforms with high proficiency in relevant languages and technologies
- Proficiency in several candidate languages such as C/C++, C#, Javascript, node.js, Go, Python, high performance communication and graphics libraries
- Solid programming experience with low-latency communication of high-bandwidth data traffic across wired and/or wireless interfaces (UDP, 802.11, TCP/IP, Bluetooth, USB) for visualization, disk storage or streaming inter-device communication
- Experience with one or more web programming technologies, such as HTML5, Web Sockets, CSS3, PHP, JSON, .Net, Java
- Intimate knowledge of new creative tools / technologies for high-performance programming

- Experience in agile or agile-like development in small, high performance teams
- Proficiency with code versioning and collaborative development tools
- Outstanding communication and presentation skills

Preferred Skills:

- Experience creating custom software for linking and managing multiple devices for communication among multiple wired and wireless devices including programmatic Bluetooth pairing, Bluetooth serial communication, and 802.11
- Experience programming in one or more game engines / environments such as JS, Phaser, Lua3D, Matter.js or Unity3D, including physics features and communication of game control /status over UDP I/O
- Programming for real-time low-latency, high-frequency web-based graphing using efficient and reliable packages
- Hands-on familiarity programming in Matlab and/or Simulink
- Experience with embedded systems, QNX, ARM programming, Zynq SoC
- Software development for medical device or health care applications
- Experience in both industry and research settings
- Demonstrated interest in neuroscience, brain-computer interfaces and/or assistive technologies for people with disability
- Familiarity with neuroscience and electrical brain signals (action potentials, local field potentials)
- Experience enabling remote access/support solutions
- Working knowledge of digital signals, digital sampling, bandpass filters

Working with the BrainGate Team:

We are an internationally recognized, multidisciplinary team of engineers, computer scientists, neuroscientists and clinicians leading innovation in the field of assistive BCI. Our research has shown that a brain-computer interface implanted in motor cortex can enable individuals with paralysis or locked-in syndrome to reliably control a computer cursor using their imagined hand movements. This intracortical system can provide high-performance control of tablets and other consumer devices. We are expanding our team to help create the world's first fully mobile, wireless BCI that will be useable at home without technical oversight. Over the next year, we will define, build and deploy this state-of-the-art BCI technology. As the team's lead back-end and integration developer, you will have a unique opportunity to apply your experience to this exciting and important project to create the future of this medical technology. Visit us at BrainGate.org.

Benefits:

You will be a full-time employee at Brown University with standard benefits including medical, dental and vision plans, all in an exceptional academic work environment.

To Apply:

Applicants should forward their resume or CV to Drs. Leigh Hochberg and John Simeral, c/o Ms. Beth Travers (beth_travers@brown.edu).