Great Minds
Internship Program 2014

IBM Research – China
Great Minds Internship Program 2014
Start Your Bright Future at IBM Research – China

Overview

IBM Research – China invites applications for the 2014 Great Minds internship program at its locations in Beijing and Shanghai. The Great Minds initiative is a competition of 2 to 6 months internships for students from United States, Europe, Hong Kong, Singapore, etc. The selected students will have the unique opportunity to work alongside with world-class scientists on challenging problems that range from leading-edge exploratory work to prototyping real-world systems and applications, within a open and inspiring working environment.

As an industry-leading IT research organization at the forefront of IBM Research’s global strategy, IBM Research – China has been focusing on accelerating our collaboration across other labs, deepening our engagement with clients through high market value projects, collaborating in far reaching research projects with partners in academia, and leading the technical trend with critical insight and breakthrough innovation.

Currently the research focus areas of IBM Research – China include Industries and Solutions, Computing as a Service, and Cognitive Computing. And we offer internship positions in various research areas such as:

- Cognitive Computing
- Internet-of-Things Research
- Cloud infrastructure and services
- Business Analytics and Mathematical Sciences
- Information Management & Analytics
- Mobile & Social Research
- Smarter Planet Solutions (E&U, Traffic and Transportation, SCM/Logistics, Banking, Healthcare, etc)
- Systems Research
Eligibility

The program is open to graduate students (preferably PhD) in second year and above with majors in (but not limited):
Computer Science,
Electrical Engineering,
Mathematics and statistics
Software Engineering,
Industrial Engineering,
Service Science,
at a recognized university in United States, Europe, Hong Kong, Singapore, etc.

IBM is an equal-opportunity employer and encourages applications from both genders as well as minority groups. We would especially like to encourage qualified women to participate in this competition.

Stipend and Relocation

The interns will be paid a highly competitive stipend compared with other leading companies in China. Additionally, to ensure the interns living in a comfortable environment, IBM Research – China will also provide corresponding travel allowances and living allowances. After the internship, outstanding students with good performance can receive a one-year IEEE membership fee as a reward.
**Information for Students**

The exact starting time and duration of the internship will be agreed upon with the winning students individually, taking into account their academic commitments and the availability of IBM staff. This program also benefits faculty members when the Great Minds winners bring back to their universities or departments a valuable understanding of real industry problems, knowledge of advanced IBM technologies, and contacts throughout IBM Research.

Great minds and great ideas drive innovation. In keeping with IBM’s traditionally close links to universities, we are seeking the brightest minds and hottest IT topics for internships at IBM Research – China.

You can win an internship at IBM Research – China in either Beijing or Shanghai labs. Participants must hold at least one recommendation letter from their faculty member. Students need to submit their current CV.

**How to Apply**

Submit your CV and recommendation letter through the link.

http://www.research.ibm.com/labs/china/

A committee of IBM technical experts will review the applications and qualified applicants will be notified for interview. The winners will start their internships in 2014 on a mutually agreed date. Please don’t forget to propose possible dates and duration (2 – 6 months) for your internship in your CV.

Deadline for submissions is 28 April 2014.
Research Area 1: Big Data Analytics and Optimization for Industry Applications

Big Data, the new natural resource, provides enterprises with competitive advantage. Innovative industry solutions and services based on big data analytics & optimization will become the next frontier of industry transformation.

The Industries and Solutions department of IBM Research–China (CRL) is one of the fastest growing groups. This group focuses on applying advanced business analytics & optimization technology to solve real–world industry challenges. Our mission is to become a world–class research organization creating innovative solutions and services for industries.

Job Description
The Industries and Solutions department aims to establish the industry thought leadership and innovative solutions through the synergy of advanced technologies and deep industry insights. It focuses on advanced analytics, mathematical optimization and data mining. The focused industries include but are not limited to:

- Energy & Utility (e.g., intelligent outage scheduling, high–precision weather forecasting, oil pipeline leak detection)
- Logistic & supply chain management
- Smart commerce (e.g., social analytics, customer insight, pricing & marketing optimization)
- Connected vehicles (e.g., massive moving object data management, mobility pattern analysis, driving behavior analysis)

As a Research Staff Member at IBM CRL in Industries & Solutions department, the responsibility of the candidate is to explore, design, implement and deliver the innovative solutions by leveraging big data analysis and cloud computing technologies.
Job Requirements:
This position requires passion, creativity, and industry insight to perform independent research and solve real-world client problems, and the successful candidates should have strong analytical, leadership, and excellent communication skills.

We are looking for candidates with PhD or Master degree in Operation Research, Statistics, Artificial Intelligence, Machine Learning, Computer Science or related areas with the following qualifications:

- Outstanding track-record in the areas of data analytics, optimization, simulation, or a related area.
- Excellent programming and system development skills.
- Self-motivated, responsible, good team-work and communication skill.
- Industry experience is a plus.
- Experience in data analytics tools, big data analytics or cloud computing is a plus

Work Location: Beijing or Shanghai
**Research Area 2: Cloud Computing**

Cloud Computing has been generating profound impact on the way IT services are delivered. Businesses are leveraging Cloud to reduce operational cost, improve business agility and make insightful decisions. After the $2 billion acquisition of SoftLayer to its high value Cloud portfolio, IBM just committed $1.2 billion to significantly expand its global Cloud footprint through a network of Cloud data centers across the world. IBM Research (CRL) aims to be the key innovation engine behind with leading-edge technologies that will make a fundamental difference for enterprise’s transformation to Cloud.

**Job Responsibility:**

In the Cloud Computing area, CRL researchers develop differentiating technologies across the stack and have them applied to IBM products, service offerings and client solutions for significant technological and business impact. The major focused areas include but not limited to:

- **Software Defined Environment,** which aims to develop a composable and programmable Cloud infrastructure for achieving both extreme efficiency and workload agility through dynamic assembly of heterogeneous resources for workload fit systems. This requires deep research in the capabilities of workload and resource abstraction, smart workload provisioning, continual optimization, continuous application delivery, etc.

- **Cloud Operating Environment and Services,** which targets key technologies for Platform-as-a-Service layer, including lifecycle management of born-in-the-cloud applications, automated operation, cloud service orchestration and patterns. It also aims to develop key cloud platform services, such as messaging, data management services, data analytics services. This requires deep research in distributed middleware, distributed data management system and analytics framework, and distributed system management.

- **Industry High Value Cloud,** which aims to develop an industry specialized Cloud platform for the delivery of transformational solutions. This requires deep research in all kinds of analytic runtime services, shared domain or industry services, and the composition capabilities for quick solution assembly, provisioning and management.
• Cloud Operational Analytics, which aims to extract business and operational insights from a huge amount of data aggregated from different levels of the entire systems. This deep learning based approach enables many scenarios in terms of application performance management, problem determination and trouble shooting, capacity planning, etc that can not be done before.

Job Requirements:
This position requires creativity, dexterity, and technical depth to solve real problems and the successful candidate will require strong analytical, leadership, and excellent communication skills.

We are looking for candidates with Ph.D in Computer Science, Automation, Electronics Engineering, Applied Mathematics, or related areas, with the following qualifications:

• Outstanding researcher with a proven track—record in the areas of Cloud computing, big data analytics, system and software engineering, or related areas
• Good software development experience and programming skills
• Strong analytical and problem solving skills;
• Creativity, enthusiasm and self—motivation.
• Team—work and good Chinese or English communication skills

Work Location: Beijing
Research Area 3: Cognitive Computing

The rise of Big Data makes cognitive systems a necessity to advance computing and provide tools for improved decision making in an interdependent and interconnected world. Cognitive systems represent a new era of computing because they differ in several fundamental aspects from today’s programming systems. Cognitive Systems interact more naturally with people to provide insight, understanding, and advice to enhance human cognition and improve decision making. IBM has just established new Watson Group and plans to invest more than $1 billion into this area.

In IBM Research – China (CRL), we are working on cognitive technologies, including dynamic learning & reasoning, behavioral science & decision support, visualization & interaction, text and speech analytics. Our technologies have been applied to many applications/solutions to solve real-world client problems. Our mission is to make CRL one of the best research labs in global Cognitive Research Community.

Job Responsibility:

As a Research Staff Member at IBM CRL in Cognitive Computing department, you will conduct research, develop and deliver innovative technologies leveraging a variety of Natural Language Processing (NLP) and Machine Learning related capabilities. These technologies include (but not limited to)

- Chinese Natural Language Processing / Natural Language Understanding (NLU) and Dialogue Management
- Image and Video Analysis
- Ontology and Knowledge Graph
- Knowledge Representation and Reasoning
- Supervised learning and Unsupervised learning
- HCI/Speech Technologies
- Data Stream
- XML
- Semantic Query and Semantic Search
- Linked Data and Social Media, etc.
**Job Requirements:**
This position requires creativity, dexterity, and technical depth to solve real-world problems, and the successful candidate will require strong analytical, leadership, and excellent communication skills along with the drive to deliver real-world innovative technologies and solutions to impact the research agenda.

We are looking for candidates with PhD degree in Linguistics, Information Science, Computer Science, Electronics Engineering, Applied Mathematics, or related areas, with the following qualifications to strengthen our team:

- Outstanding researcher with a proven track-record on both conceptual and empirical aspects in the areas of NLP and HCI, or a related area
- Good software development experience and programming skills to implement algorithms and conduct experiments
- Strong analytical skills
- Creativity, enthusiasm and self-motivation
- Team-work and good Chinese/English communication skill

**Work Location:** **Beijing or Shanghai**
Research Area 4: Internet of Things

With the advance of sensor and actuator technologies, the widely deployed wireless broadband network, as well as the fast development of big data and Cloud platforms, the physical world is being better monitored, managed and served through the connectivity and information technology & big data analytics based services delivered from Cloud platform. This is creating significant transformation opportunities to asset intensive industries across Energy & Utility, Mining, Chemical & Petroleum optimizing the management of assets and industrial operations, and to consumer product & service oriented industries across automotive, electronic and healthcare enabling connected life services.

The Internet of Things (IoT) research program of IBM Research–China (CRL) is leading to develop world class technology and solution research innovations enabling the enterprises across industries to accelerate the transformation.

Job Description

The IoT research program aims to develop Cloud based technology innovations more effectively processing, managing and analyzing the streaming data collected from physical world with spatial–temporal attributes & physical domain characteristics, and to develop industry domain oriented solutions delivered as Cloud services to enable enterprises business transformation.

The responsibilities of a Research Staff Member working on IoT at IBM CRL include the exploration, design, implementation of the innovative technologies and solutions especially in the following areas:

- Sensor data’ s messaging and management focusing on performance & scalability optimization on top of Cloud platform
- Sensor big data analytics combining both machine learning & physical modeling approaches leveraging Cloud computing infrastructure
- IoT industry solution innovations focusing on intelligent energy management, connected vehicle and connected healthcare services
- IoT solutions rapid development and operation optimization technologies
Job Requirements:
This position requires passion, creativity, and industry insight to perform independent research and solve real-world client problems, and the successful candidates should have strong analytical, leadership, and excellent communication skills. We are looking for candidates with Ph.D or Master in Computer Science, Industrial Automation, Operation Research, Artificial Intelligence or other related areas with the following qualifications:

- Outstanding academic track-records demonstrated by high quality publications and research work
- Excellent programming and system development skills
- Self-motivated, responsible, good team-work and communication skill
- Industry experience is a plus
- Experience in big data analytics or cloud computing is a plus

Work Location: Beijing or Shanghai
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