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Machine learning / Big Data analytics applied research student

Company: Microsoft  Location: Herzeliya

Group: ILDC Big Data Incubation Group

General background: The Big Data Incubation Group at Microsoft’s Israel Development Center is a start-up spirited, small research and engineering team focused on incubating new, innovative offerings that will be at Microsoft forefront in the big data and cloud era.

We are offering graduate students the opportunity to work as a team on cutting-edge, real-world applied research problems. The interns will participate in scoping the problems in the context of the product, business and user experience challenges at hand, giving them an opportunity to influence the next generation of Microsoft products

Responsibilities: Contribute to ideation, scoping, and definition of research problems; Conduct independent and team research; Prototype algorithms and experiment on large amounts of real-world data; Collaborate with engineers on feature implementation.

Requirements:
• PhD/MSc student, researching a data-related topic.
• Strong programming skills (Java/C++/C#).
• Algorithm development skills.
• Background in Recommender Systems or other Machine Learning or Data Mining areas – a strong advantage.

Full/Part time position: Full time for the internship period

To apply for this position click here

Researcher student in the field of computer vision and machine learning

Company: Microsoft  Location: Haifa

Group: Advanced Technology Labs at Microsoft Research Israel

General background: Advanced Technology Labs at Microsoft Research Israel are looking for researchers in the field of computer vision and machine learning.
Responsibilities: You will join a team developing state of the art algorithms for face recognition, object recognition and tracking, gesture recognition, image processing and more. You will get the opportunity to collaborate and publish with top researchers across Microsoft Research and transfer technologies to Microsoft products such as Xbox/Kinect.

Requirements:
- The position is intended for MSc and PhD students in Computer Science or Electrical Engineering with focus on computer vision, machine learning or image-processing.
- Research capabilities, with strong theory/algorithm background and very good understanding on how to apply advanced knowledge to solve real problems.
- Fluency in Matlab.
- Good programming skills (C/C++).
- Industry experience is an advantage.

Full/Part time position: Full time for the internship period

To apply for this position click [here](#)

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Software development engineer student 1

Company: Microsoft  Location: Herzeliya

Group: Online Services Division (Recommendations Platform Team)

General background: The Bing Information Platform team is building a platform offering transformative experiences to leverage the world’s knowledge through natural interface. We are building a world-class team of developers to build the platform and experiences that defines next generation of innovation. We will stop at nothing short of changing the world.

Responsibilities: The Israeli branch of the Bing Information Platform builds services that enable personalized user experiences across Microsoft’s products, based on data driven recommendations. Our services are powered by architecture and algorithms that process terabytes of data and respond within milliseconds.

Requirements: Position is open to all B.Sc. /M.Sc. /Ph.D. students in Computer Science or similar area, with past development experience of complex large scale systems (C# knowledge is preferred).

Full/Part time position: Full-time position for the internship period

To apply for this position click [here](#)
Software development engineer student 2

Company: Microsoft  Location: Herzeliya

Group: Online Service Division (Personal Data Platform)

General background: The Israeli branch of OSD is responsible for providing personalized user experience, based on data driven recommendation and optimization platform and engines, while preserving privacy essentials.

The newly emerging personal data platform provides the underlying storage for all user data, as such being a fundamental component for the entire OSD.

Our environment includes large scale software systems that perform heavy duty processing and serving in a distributed computation environment while integrating with other systems and devices.

Responsibilities: We are looking for exceptional, passionate interns, who are keen to learn and have and extensive hands on experience with the cutting edge technologies available today.

Requirements:
- MSc./BSc. Students of Computer Science or Software Engineering, 2nd year or above, GPA 80+
- Strong programming skills, driven by quality and engineering best practices
- Tech enthusiast with passion for technology, mobile and web apps
- Developed a working service/app/prototype, even if just for fun (Advantage)
- C#, .NET and MS development environment/tools (Advantage)

Full/Part time position: Full-time position for the internship period

To apply for this position click here

Data science student 1

Company: Microsoft  Location: Herzeliya

Group: BI

General background: Our team is working on a BI cloud service. The project includes end to end scenarios from Office 365 and also uses as a foundation to other BI
scenarios. The team is part of the ILDC BI organization that owns the cloud part of the 1.5B$ MS BI business.

**Responsibilities:** This position offers the opportunity to be part of a challenging and innovative project that combines cutting-edge technologies of advanced data analysis, of cloud services, and of interactive UX into a powerful and exciting product. The position also offers the opportunity to be part of an agile, strong, and successful engineering team.

We’re looking for an M.sc/Ph.D. intern with knowhow/experience around data science to help us build the right BI solution for our customers, as well as drive up its quality (e.g. through telemetry data analysis, etc.).

**Requirements:**
- M.Sc. / Ph.D. in Computer Sciences / Mathematics.
- Background in machine learning, statistics, data mining.
- Strong analytical abilities and an “attitude for data”.
- Experience in working with “real” data is an advantage.
- Team player – ability to communicate and cooperate with others.

**Full/Part time position:** Full-time position for the internship period

**To apply** for this position click [here](#).
around data science to help us build the right BI solution for our customers, as well as drive up its quality (e.g. through telemetry data analysis, etc.).

**Requirements:**
- M.Sc. / Ph.D. in Computer Sciences / Mathematics.
- Background in machine learning, statistics, and data mining.
- Strong analytical abilities and an “attitude for data”.
- Experience in working with “real” data is an advantage.
- Experience in data-mining algorithms is an advantage.
- Team player – ability to communicate and cooperate with others.

**Full/Part time position:** Full-time position for the internship period

To apply for this position click [here](#)
Implementation of parallel min-cut/max-flow algorithm for large graphs which are sub-sets of a regular 3D grid

Company: Philips Healthcare

General background: Although several designs of parallel min-cut/max-flow algorithm are available, there is no implementation that can be integrated in our product, due to various reasons.

Responsibilities: Production-quality implementation of parallel min-cut/max-flow algorithm for large graphs with maximal speed-up and minimal memory consumption.

Requirements: Basic algorithmic skills

Full/Part time position: both

Contact details: Mark Rabotnikov, email: Mark.Rabotnikov@philips.com

References:
Research of Logic Optimization Technologies

Company: IBM Research Labs – Haifa

General background: The state-of-art design of computer processors targets high-performance operation under tight limitations of power consumption. The demand for high-speed and low-power operation dictates complex design flows to satisfy these, commonly contradicting, requirements. Most of the design is implemented using automatic tools that translate the logic description in RTL languages to the actual scheme of interconnected logic gates. This is done by variety of tools performing synthesis, placement and routing of the gates. However, some of the resulting logic paths have high delay and cause bottleneck, limiting the overall chip performance. These critical paths pull significant design and optimization efforts, and have major impact on overall power consumption due to measures required to reduce the delay. In order to battle these issues, tools are required that will be able to significantly improve the performance and power consumption of the chip, with minimal changes to the existing design.

Project description: The goal of the project is to research and develop novel technologies which will allow performance improvement and power reduction in the design. The optimization techniques are based on logic transformation which should improve the timing of critical paths with minimal changes to the design. The work will involve gathering and analyzing data produced by logic synthesis tools, which will be used for identification of optimization opportunities, analysis for selection of best candidate paths and the related transformations, and applying of the transformations to selected logic paths. The impact of the applied techniques on timing and power will be analyzed. Additionally, the new techniques will be compared to the existing optimization methods in synthesis flow. The results of this research will be documented in a paper which will be submitted to a top design automation conference and/or a relevant journal.

Required skills:
- Logic and logic design
- Background in electrical engineering is recommended
- Good programming skills
- Graduate student is preferred. Outstanding undergraduate can also apply

Full/Part time position: Full time summer internship.

Contact details: Arkadiy Morgenshtein, arkadiym@il.ibm.com
R&D of a Memory Model Testing System

Company: IBM Research Labs – Haifa

General background: The memory model is a significant part of any modern computer architecture. Simply put (and with some loss of accuracy), the memory model is a set of rules by which one can compute whether a multi-threaded program can terminate at some state.

Take this program for example:

<table>
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<tr>
<th>Initial state: x=y=0</th>
<th>Thread 0</th>
<th>Thread 1</th>
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<tbody>
<tr>
<td>x=1</td>
<td>read y</td>
<td></td>
</tr>
<tr>
<td>y=1</td>
<td>read x</td>
<td></td>
</tr>
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Is it possible for thread 1 to read 1 from y, but 0 from x? The answer depends on the memory model.

The Power and ARM architectures rely on the weak memory model. This model guarantees "very little", thus enabling high performance for multi-threaded programs. Testing systems for their compliance with the memory model is a tough and challenging task. Much research has been invested in this area, but with the growing complexity of the memory models (in light of, for example, transactional memory) there’s much more to be done.

Project description: The goal of the project is to augment a system developed in Cambridge by adding to it, multiple aspects affecting system behavior under a given test. These include, for example, the placement of the test in memory, address selection, thread selection, etc. For all of these, and more, intelligent, pseudo-random selection is required to ensure the overall quality of the test suite.

Required skills:
- Good programming skills
- Knowledge and understanding in parallel and distributed systems is an advantage.
- Graduate student is preferred. Outstanding undergraduate can also apply

Full/Part time position: Full time summer internship.

Contact details: Amir Nahir, nahir@il.ibm.com
R&D on intersecting test-cases to facilitate effective debug

Company: IBM Research Labs – Haifa

General background: In the process of hardware development, we leverage random test-case generation tools to create random tests to stimulate the design. When debugging failures, we often require multiple failing test-case instances to find the root cause of a bug. These are test-cases generated from the same template, with slight differences between them (originating from the random nature of the test-generator).
In many cases, we find ourselves reading multiple failure reports for similar tests, trying to determine the commonality between them in order to create a short test which triggers the bug.

Project description: The goal of the project is to add meta-data tracking the choices the test-generator makes, and to automate the process of intersecting failing test-cases to find their commonality.
The results of this research will be documented in a paper which will be submitted to a top design automation conference and/or a relevant journal.

Required skills:  
• Good programming skills  
• Graduate student is preferred. Outstanding undergraduate can also apply

Full/Part time position: Full time summer internship.

Contact details: Amir Nahir, nahir@il.ibm.com

Visualization for multi-criterion decision making problems

Company: IBM Research Labs – Haifa

General background: Multi-Criterion Decision Making is a growing interdisciplinary field that primarily involves research from the domains of Computer Science, Decision-making, and Visual Analytics. It addresses questions in multi-objective optimization, decision making theory, visualization, and Game Theory. As an increasing volume of real-world problems are formulated and solved as multi-objective problems, tackling open questions in decision making is much needed.

Project description: A crucial part of the effort to study the conflict of a given multi-objective problem at hand is to explore the different decision alternatives by visual means. Towards this end, investigation of the existing state of the art data visualization techniques, encoding, interactions and algorithms is needed, in addition to free-style thinking to yield novel approaches. Data visualization implementation would involve the latest Web2.0 technologies.
We offer: We offer exploratory Research project possibly leading to a scientific publication in addition to participating in developing a novel solution with a clear productization roadmap.

Required skills:
• Background in Data Visualization, Visual Analytics is an advantage
• Background in Web2.0 technologies (JavaScript, Dojo) is an advantage.

Full/Part time position: Full time student position for the summer period

Please apply on line: https://www.research.ibm.com/haifa/careers.shtml

Contact details: davida@il.ibm.com

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**Decision making in conflicting multi-criterion problems**

Company: IBM Research Labs – Haifa

General background: Multi-Criterion Decision Making is a growing interdisciplinary field that primarily involves research from the domains of Computer Science, Operations Research, and Visual Analytics. It addresses questions in multi-objective optimization, decision making theory, visualization, and Game Theory. As an increasing volume of real-world problems are formulated and solved as multi-objective problems, tackling open questions in decision making is much needed.

Project description: Design and implement efficient algorithms for automated analysis of Pareto frontiers and for assisting the human-driven decision making process. Incorporate your solution with an existing environment of optimization and visualization in state-of-the-art technologies (Java, Web2.0 Javascript\Dojo).

We offer: We offer exploratory Research project possibly leading to a scientific publication in addition to participating in developing a novel solution with a clear productization roadmap.

Required skills:
• Strong algorithmic background
• Experience in Data Mining and Machine Learning is an advantage
• Background in Game Theory and Economics is an advantage

Full/Part time position: Full time student position for the summer period.

Please apply on line: https://www.research.ibm.com/haifa/careers.shtml

Contact details: davida@il.ibm.com

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Researcher, privacy and security

Company: IBM Research Labs – Haifa

General background: Large data sets such as medical data sets have enormous value for society and the companies that collect them. The ability to extract, analyze and explore the data can advance science, provide insight and assist in decision making. Anonymization is the process of removing, generalizing and aggregating user information such that the privacy of individuals is not compromised (it is not possible to re-identify users). Anonymized data sets can then be shared with researchers to study and analyze the data or sold for profit.

Though many anonymization algorithms exist, most of them are not able to handle large sets of data (data sets that do not fit in memory). This project will focus on the development of an anonymization algorithm able to handle efficiently very large data sets. The algorithm will use sampling to overcome some of the difficulties associated with large data set and learning or prediction techniques to guide and optimize the algorithm.

We offer: An opportunity to work and conduct research with a team working on the privacy domain on a topic that is on the frontier of the anonymization research.

Responsibilities: The work will cover all stages of research including problem definition, literature review, algorithm development, evaluation and the opportunity to write and publish a scientific paper.

Requirements: Good research and self-learning skills, excellent programming skills. Knowledge of Java is a plus.

Full/Part time position: Summer internship

Contact details: Micha Moffie, moffie@il.ibm.com

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Researcher at the video and GIS analytics group (Computer Vision)

Company: IBM Research Labs – Haifa

Project description: The Video and GIS Analytics group – part of the Multimedia department at IBM Research – specializes in advanced real-time video technologies. This unique group focuses on novel approaches for information overload and technologies in the areas of real-time rich-content streaming and management, video communication frameworks and geo-spatial situational awareness. The group develops a scalable framework for real-time connectivity, as well as a platform for off-line rich-media tagging search & retrieval of archived rich media assets.
In the area of video analytics, our group conducts research and develops novel computer vision algorithms (also using machine learning tools) for various problems such as object detection, tracking and recognition, scene understanding and event recognition.

The goal of the project is to develop and implement novel algorithms for solving various computer vision problems related to video (such as the ones mentioned above), with a special emphasis on robustness and efficiency.

**We offer:** An opportunity to work and conduct high-quality research with a leading research group in the area of video analytics and computer vision, on a topic that is on the cutting edge of research and technology.

**Required skills:** Graduate student with good research and self-learning skills, as well as a strong background in image and video processing, computer vision, and preferably also in machine learning. Excellent programming skills in MATLAB and C++ (prior acquaintance with OpenCV is a plus).

Full/Part time Position: Summer internship

**Please apply on line:** [https://www.research.ibm.com/haifa/careers.shtml](https://www.research.ibm.com/haifa/careers.shtml)

**Contact details:** ASHOUR@il.ibm.com

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**Social stream analysis research in Web 2.0 and Social media technologies group**

**Company:** IBM Research Labs – Haifa

**General background:** Social stream applications (activity streams), such as Twitter or the Facebook newsfeed, are becoming more and more dominant on the web. Through such streams, users share their activities, opinions, ideas, favorite links, photos, and videos, and in parallel get similar updates from their social environment. Similarly to their counterparts on the Web, social stream applications have also emerged inside organizations. Yammer, Chatter, and IBM Connections are a few prominent examples. In this project, the goal is to develop a model for scoring of activities in the enterprise stream. The model may include personalized factors that reflect the user’s interests and global factors that characterize the activity as whole regardless of the user. Our goal would be to publish a scientific paper on the on the hand, and contribute to the IBM Connections product with advanced analytics functionality on the other.

**Requirements:** Graduate students with strong engineering skills and excellent research skills who can work as part of a team. Java programming knowledge is a must, due to the short term of the project. Web development skills are an advantage and so is existing publication experience.
**Full/Part time position:** The project fits a 3-month internship on a full position basis.

**Contact details:** Ido Guy, ido@il.ibm.com

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**Semantic web technology application to product development life-cycle**

**Company:** IBM Research Labs – Haifa

**General Background:** Semantic Web Technology consists of graph representation of information, associating this information with semantic description via ontologies and applying sophisticated queries and inference engines to derive no insight from data, enabling application of that data in new ways not possible in classical data processing. Systems Engineering, specifically that which is model-based (MBSE) is a discipline heavily engaged in modeling from product inception throughout the development lifecycle, through formal validation, simulation, optimization and production. The application of Semantic Web technology in tooling this development process has been shown to be very successful and promising.

Our group is engaged in a couple of European Community projects in which we develop technology based on the Semantic Web approach to facilitate model sharing among all tools that participate in a product development life-cycle, creating a holistic environment for collaboration, analysis, optimization and more.

Our purpose in this internship is to have you join the team developing a platform (based on the IBM Jazz) to support this collaborative work and enhance it with new technologies and capabilities. You will enjoy significant freedom to carry out your tasks which will hopefully produce capabilities that will be included in the packaged solution.

The tools you will use include (but not exclusive) open source and standard technologies:
RDF, OWL, Jena, Tomcat, Web 2.0, Dojo, java-script, Eclipse, Jazz, Java and any of byte-code based languages.

**Required skills:**
- Background in Web2.0 technologies (Javascript).
- Understanding of RDF, OWL and other Semantic Web technologies
- Java

**Full/Part time position:** Full time student position for the summer period

**Please apply on line:** [https://www.research.ibm.com/haifa/careers.shtml](https://www.research.ibm.com/haifa/careers.shtml)

**Contact details:** shani@il.ibm.com

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Summer internships in various areas related to IT systems infrastructure

Company: IBM Research Labs – Haifa

Topics include cloud computing, networking, storage, system and code optimization, and software quality.

Qualifications for all positions:
- Background in software design and/or development
- Systems experience, or an inclination to become involved in systems work
- Familiarity with Linux and open source technologies is an advantage
- Candidates should be able to work independently and be strong team players

Required skills: Good research and self-learning skills, excellent programming skills with a passion for systems/storage/network research and, preferably, to system internals.

Full/Part time Position: Summer internship

Please apply on line: https://www.research.ibm.com/haifa/careers.shtml

Contact details: WOLFSTAL@il.ibm.com

Biomedical information system development

Company: IBM Research Labs – Haifa

General background: Chromosomal analysis is a central component in prenatal diagnostics. Microarray-based methods for detecting chromosomal abnormalities are gradually entering clinical use, supplementing the traditional karyotyping method. These new methods generate a high-resolution map of copy number variations in an individual's genome. The proposed internship aims at developing a system for storing results of copy number variation tests in a relevant population, in a manner which could facilitate clinical interpretation by comparing the current patient's variants to previously seen samples and their clinical outcomes, from either the system or literature.

Responsibilities: The intern will be responsible for defining system requirements through collaboration with potential system users, followed by implementation, quality assurance and initial deployment of the system.

Requirements:
- Relevant Biological knowledge
- Experience in data management systems
- Background in Information Retrieval
Propose software-like methodology for hardware development

Company: IBM Research Labs – Haifa

General background: High-end processors are usually implemented in low-level coding style of a hardware description language. The reason for the low-level style is to allow efficient implementation, mainly in terms of timing and area. However, the low-level style hardly resembles the high-level intent and specifications. The gap between the intent and the implementation makes it hard to write, read and maintain the code. We believe that it would be possible to apply software-like design style and methodology to hardware design, achieving higher levels of abstraction and hence improved productivity.

Project description: The goal is to propose a new way to design components of high-end processors using software development state-of-mind. The work includes learning the specification of a specific component which has already been implemented in a more traditional way, proposing an alternative way and implementing the component in this new way. The new way might rely on an existing language (e.g., SystemC), propose a new language, propose a component library etc. The implementation should be one that is believed to allow efficient results in terms of performance.

Required skills:
- Creative thinking
- Good software design skills
- Background in logic design
- Graduate student is preferred. Outstanding undergraduate can also apply

Full/Part time position: Full time summer internship

Contact details: Ilan Beer, beer@il.ibm.com

High personal skills
The project's goal is to develop a method for identifying the data types/classes that exist in a certain application and on the web. By analyzing HTML files that the application generates (such as table headers, field names in forms, etc.). An example: in the form below, there are two fields. By analyzing metadata and other information found in the form, it is necessary to conclude that the first field is "Name" and the second field is "Website". We offer the opportunity to participate in research and development of a system in the field of Privacy and Security with a focus on the web. The participant will have the opportunity to learn about the latest developments in the field of hiding information in applications and on the web, including content analysis, protocol sniffing, and others, to get to know various technologies in the world of the web to think about an appropriate solution and to develop a prototype (prototype) that demonstrates the solution, including the development of appropriate algorithms. The project will include the definition of the problem, planning, execution, and publication at the discretion.

**Requirements:**

- Basic knowledge of the world of the web and the various technologies therein.
- The ability to learn and use new technologies.
- Programming background, advantage for OO/Java.
- Research mindset, the ability to learn and work independently.

**Scope:** Full-time job for the summer with the possibility of extension depending on the results.

**Contact:** Boris Rosenberg
borisr@il.ibm.com
Amdocs

Statistical-based Text Analytics

**Company:** Amdocs

**General background:** Amdocs Customer Management (CM) division is offering full line of products for customers’ management. The rise of big data in general and in telecommunication arena specifically, brings new exciting opportunities, together with big challenges.

Project Objective: Using machine learning and data mining techniques, such as statistical NLP (Natural Language Processing), we’re looking for insights regarding customers’ behavioral patterns within text sources.

**Responsibilities:** Developing a complete Proof of Concept (POC) project, including a complete data mining cycle, from data collection, via features selection and designing and implementing a machine learning model to real life data. This is an extraordinary opportunity to conduct a complete machine learning research project to a real life problem. A successful POC will be implemented within our product.

**Requirements:**
- Theoretical background
  - Probabilistic reasoning – a must;
  - Statistical NLP – a must;
- Programming skills
  - Either Java or R – an advantage
  - Experience with Text Analytics open source packages – an advantage

**Full/Part time position:** Full or part time position, at least three days a week for three months.

**Contact details:** Gilad Barkan [Gilad.Barkan@amdocs.com](mailto:Gilad.Barkan@amdocs.com) 09-7761234, 052-8944566

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**Mobile cell site process analysis and prediction**

**Company:** Amdocs

**General background:** Amdocs OSS division is offering a product for managing the operators’ complex procedure of cell site deployment. This includes site visits, radio
parameters setup, different authority’s approval etc. In total there are around 200 processes involved for a single site rollout, where a customer can reach hundreds of sites per day.

Project Objective: Using a Bayesian network probabilistic approach, and running over sample data, students should develop software that can “learn” the behavior of processes in mobile build environment. After assigning different probabilities to the nodes in the Bayesian net, different queries might be supported, for example what are the net effect of adding a new process in the chain – in time and operational costs.

**Responsibilities**: Develop the probabilistic engine, possibly using Amdocs licensed tools (Netica). The engine should have a continuous learning process, thus updating its internal Bayes network. The engine should expose standard interface to answer network related queries.

**Requirements**: Programming skills in Java is a must, probability and probabilistic reasoning background is a must, genetic algorithms background is an advantage.

**Full/Part time position**: Full or part time position, at least two days a week for three months.

**Contact details**: Dani Livne Dani.Livne@amdocs.com 09-7786313, 052-4474243

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**Enterprise Performance Management Researcher 1**

**Company**: Amdocs

**General background**: Amdocs is a leading company in delivering software for telecommunication providers around the globe. Knowing the early signs for software delivery can be a top managerial tool.

**Responsibilities**: Our objective is to analyze the past results of Amdocs’ delivery projects that were marked as in risk by their managers, identify variables that could have alert on a risk before the manager raised it, create a prediction model for risks from which we can draw recommendations and warnings.

Amdocs will supply:
- Vast database with relevant parameters’ measurements over time.
- Professional consulting of project managers, business background and interviews
- Office, computer and analysis tools.

**Requirements**:
Intensive applied mathematics background (Phd. prefered) in performance or statistical analysis. Knowledge in risks management is an advantage.
**Full/Part time position:** Either full time or part time, for 3 months at least, in Amdocs office in Raanana.

**Contact details:** Gilli Shama, [gillis@amdocs.com](mailto:gillis@amdocs.com) 09-7786214

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**Enterprise Performance Management Researcher 2**

**Company:** Amdocs

**General background:** Amdocs is a leading company in delivering software for telecommunication providers around the globe. A software delivery project starts in defining the scope of solution.

**Responsibilities:** Our objective is to analyze the past results of Amdocs’ solution scoping, identify variables that may affect it, create a prediction model for scoping success from which we can draw recommendations and warnings.

Amdocs will supply:
- Vast database with relevant parameters’ measurements over time.
- Professional consulting of scoping experts, business background and interviews
- Office, computer and analysis tools.

**Requirements:** Intensive applied mathematics background in performance or statistical analysis (M.Sc., Ph.D. students or post-doc)

**Full/Part time position:** Either full time or part time, for 3 months at least. At least 2 days a week at Amdocs office in Raanana.

**Contact details:** Gilli Shama, [gillis@amdocs.com](mailto:gillis@amdocs.com) 09-7786214
Statistical-based text analytics

**Job Description:** Join a small futuristic team defining and implementing a new architecture optimized at addressing Artificial General Intelligence (AGI) challenges in Software and Hardware.

Unique opportunity to shape the future in a startup like team within a global company. The position allows flexible working modes (part-time and/or temporary assignment), very attractive to an academic/industry balanced career.

**Qualifications & Experience:**
- At least 5 years of experience in Artificial Intelligence, AGI, Cognitive Architectures in the industry or academy. Advantage to candidates with experience in both environments.
- Deep knowledge in existing architectures, programs, organizations – a must.
- Capability to work in a global team and in a dynamic environment. Creative, innovative and daring mind, welcome to join...

**Contact details:** hagit.yaffe@intel.com (Req Title: Cognitive Computing Architect; Req Number: 705922)

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Neural networks architect

**Job description:** Join a small team setting the architecture of future Intel products, to implement NN solutions for a variety of problems, such as Speech and Image recognition, Scenery Understanding, Natural Language processing, Gesture recognition, etc... The solutions will include combinations of SW and HW. The position allows flexible balance between academic and industry careers.

**Qualifications & Experience:**
- At least 10 years of experience in Neural Networks related areas and/or Machine Learning techniques.
- Deep theoretical knowledge combined with significant hands on experience in the academy and/or the industry - advantage to candidates with experience in both environments.

**Contact details:** hagit.yaffe@intel.com (Req Title: Neural Networks Architect; Req Number: 708674)
Auto arrangement algorithm for a minimal size data structure

Company: Marvell Israel (Petach Tikva/ Yokneam)

Job Description: In order to pass packet information between pipelined modules in a Switch a descriptor is used. The descriptor is a data structure that contains fields of information, each in different width (bits). Some fields are orthogonal to other fields, meaning – for a given packet only one of them is being used in the descriptor. The project goal is to find and implement an optimal algorithm to build a minimal sized descriptor. The minimization is done by proper selection of fields to share the same offsets in the descriptor if they are orthogonal and by placing them in it accordingly.

Requirements:
- Introduction to programming, Linear Algebra
- Algorithms and data structures- Advantage
- Experience in handling NP complete problems- Advantage

Full/Part time position: Full time- 3 months

Contact details: maiaf@marvell.com

Logic optimization at late backend design stages

Company: Marvell Israel (Petach Tikva/ Yokneam)

Job Description: 
Problem description:
1. Logic synthesis is done at 1st backend stage by running the DCT (Design Compiler Topographical) synthesis tool. Following stages are performed at ICC (IC Compiler) tool: placement, CTS (Clock Tree Synthesis), routing, min and max delay closure. At these stages the design advances in its physical implementation. Each cell and path gets more accurate physical location and timing in every following stage. These location and timing often draw away from their original state at synthesis.
2. Backend tools set for dealing with timing optimization do not include resynthesis or logic optimization at these late design stages. Having a logic optimization tool for late design stages may help in timing optimization and in prevention of max delay timing degradation.

Research proposal:
1. Investigate studies and algorithms for local logic optimization at late design stages with focus on cell selection optimization not covered by modern backend design tools.
a. One example is considered in attached paper on logic timing optimization at late backend design stages: “Timing Optimization by Restructuring Long Combinatorial Paths” on local timing optimization at late design stages.
b. Additional existing studies shall be searched and studied.
c. New proposals can be developed.

2. Propose a practical solution or algorithm.
a. Solution must meet the constrains which will be defined by HSCD backend team. I.e. the study shall be practical and consider only the solutions which can be practically implemented by existing tools and which will not create timing degradation of neighboring paths not optimized by the new algorithm.

3. Write a summary of work.
a. It shall cover the studied methods, solutions and algorithms.
b. Shall conclude if practical solution meeting the constrains was found. If yes, it’s description.

Requirements:
- EE/CS Ph.Ds’ student
- Courses in VLSI and logic design
- Experience in backend design- advantage

Full/Part time position: Full time – 3 months

Contact details: maiaf@marvell.com

Documentation automation of variant Configuration Registers

Company: Marvell Israel (Yokneam)

Job description: Each Sub-Unit in the Semiconductor devices in the product line has an Address Space of its configuration Registers that is documented in the Device Data Base (CIDER).
The Unit subject to this project is a generic Unit used in all devices in the product line. However, the documentation appears in the Device Data Base is generic without specific details for each device. The target of the project is implementing flow for editing the Device Data Base for addition of the relevant details for each Device. The project will be tutored by the CIDER team.

Requirements:
Courses:
- Introduction to Computer Science
- Software programming courses
Experience and Knowledge:
- C# is advantage
- PERL is advantage

Full/Part time position: Full time position for 3 months

Contact details: maiaf@marvell.com