**2013-2014 UC Berkeley Master of Engineering**

**Capstone Project Proposal**

**Overview:**

The Capstone Project, a 5-unit Maser of Engineering course requirement, integrates core leadership coursework with a student’s engineering concentration. Capstone Project teams range from three to ﬁve students, drawn from the cross-disciplinary engineering cohort, to apply diverse knowledge and skills to actual industry problems, identiﬁed by faculty or industry partners. The Fung Institute for Engineering Leadership within the College of Engineering provides capstone cohort support and curriculum integration.

**Capstone Sponsor Information:**

Please read the following instructions and requirements before submitting your proposal. In order to be considered, this document must be completed in full. By submitting this proposal, you agree to its inclusion in the *UC Berkeley Master of Engineering Capstone Project Portfolio* for the 2013-14 Academic Year. Use of links, diagrams and images to illustrate your project is encouraged. Example projects can be found here: <http://funginstitute.berkeley.edu/programs/capstone-projects>

**Timeline for submission and important deadlines:**

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| --- | --- | --- |
| **Year** | **Dates** | **Activity** |
| **2013** | **March** | **Capstone Project Call for Proposals** |
|  | **By April 1** | Submit a one-sentence description of your project idea. |
|  | **By May 1** | **Full Project Proposals due**  Please use the proposal form supplied. |
|  | **May-July** | **Proposal Review –** screening for skill set and objective fit with incoming M.Eng. class**.** |
|  | **July-August** | **Student Project Exploration**  Industry advisors should be available for questions and interview screening of students during this time. |
|  | **August 12-31** | **Capstone Team Selection Process, Sponsor and Faculty office hours** |
|  | **September 1-12** | **Capstone Final Match:** Notification no later than Sept 12 |
|  | **Early December** | **Fall Student Poster Session** |
| **2014** | **Early May** | **Spring Student Poster Session** |
|  | **May 1-17** | **Final Student Presentations and Deliverables** to Industry & Faculty Advisors |

If selected for the 2013-2014 Capstone Project Portfolio you will be responsible for sponsoring and adhering to the terms you outline below. **As the Capstone Sponsor, please *initial* the following requirements by which you are agreeing to the following:**

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x Provide a point person from your organization to advise the capstone team on a regular basis and throughout the whole duration of the project

x Supply all necessary tools, software, and/or data necessary to do the project in a timely manner

x Ensure the project has achievable deliverables that fit into a 9-month timeframe

x Provide clear objectives for both the technical and business-related challenges of the

project

By signing below you are indicating that you completed this form to the best of your knowledge and are agreeing to all the requirements of UC Berkeley’s Capstone Project Program as listed above.

We look forward to working with you!

Name: Manjunath Mittha Title: Sr. Program Mgr – Business Operations

Email: [Mittha@netapp.com](mailto:Mittha@netapp.com) Phone: 408-822-1414

Signature or Initials: MMMM

Date: 5/1/13

*Questions?* Contact Beth Hoch hoch@berkeley.edu or 510-664-4587

**Proposal Form (please complete all sections):**

|  |  |
| --- | --- |
| **Project Title** | NetApp Internship Project Proposals |
| **Industry Partner**  Company Name, Department, and Website | NetApp, Inc  http://www.netapp.com |
| **Problem**  (Describe the industry problem your project addresses in 100 words or less.) | We have multiple opportunities and would be glad to have one or more teams from UCB help address. We’d be glad to discuss any of these opportunities that want to be pursued.   * Project 1   + Dimensional modeling & transformation (star schema) within Hadoop * Project 2   + Autosupport Backend Supportability * Project 3   + Intuitive User Interface Design for Business Intelligence applied to Source Code Awareness * Project 4   + Resource Modeling For Targeted Testing * Project 5   + Design by Contract for C and C++ code: writing testable specifications |
| **Technical Challenge**  (Highlight the technical challenge of the problem in 100 words or less) | * Project 1   + ASUP data is mix of structured and unstructured machine configuration and logs. The idea is to prototype a star schema model within Hadoop and support SQL-like data processing. * Project 2   + ASUP data processing has various components and technology stack working in tandem in Hadoop ecosystem. The idea is to dynamically analyze the process logs produced during this workflow for self-supportability/monitoring of this Ecosystem. * Project 3   + Drive source code intelligence based on several granular variables such as code fragility, testing, and technical depth. * Project 4   + Large amount of test run data is generated which could be analyzed for modeling future Tests at different levels of workflows. Processing this data itself poses complexity in terms of compute power and time taken. * Project 5   + NetApp’s flagship ONTAP source code is in C/C++. This vast source code needs modern techniques of static code analysis to provide insights into interface/contract violations, ambiguities, generate unit testcases, and self-documenting. |
| **Objective**  (In 100 words or less, use bullet format and ensure objective is practical for a 9 month project) | * Project1   + Develop a Clydesdale based Star schema implementation on Hadoop for ASUP data model * Project2   + Develop an event driven alerting and monitoring system for the ASUP hadoop ecosystem * Project3   + Develop a modern design-by-contract based prototype for static code analysis on ONTAP C/C++ source code * Project4   + Develop UI driven intelligence tool guiding users to optimize business decisions in the context of source code management by providing information at both small level of granularity as well as aggregate information at module/component/project level * Project5   + Develop a system for efficiently processing and analyzing test data, and delivering it to strategic points within the development and testing workflows to enable targeted testing (add tests when appropriate, and remove tests which are not required) |
| **Project Illustration (Optional)**  Include websites, videos, diagrams or images to help students understand your project | NA |
| **Open or Closed Model – Please check one:**  Open Model (Public collaborative and may use university lab equipment) or Closed Model (Virtual internship, private, with faculty liaison)  \* Please list the necessary equipment, software or data that is needed and will be provided to the team. | Please select one and clearly outline what, if any, resources will be provided:  Open Model/Public collaborative  **Tools and Equipment that will be provided include:**  x Closed Model/Virtual internship  **Tools and Equipment that will be provided include: Access to NetApp equipment, locations and network** |
| **Ideal Team Size**  (We prefer teams of 4 students, unless otherwise specified) | 3 or 4 |
| **Departments Accepted**  (Choose from CEE, EECS, IEOR, ME, MSE, NE. Indicate ideal team makeup and technical concentrations desired, i.e.  “1 CEE ; 1 EECS; 2 IEOR”) | *Please indicate your ideal team makeup by specifying the technical concentrations desired.*  EECS = Electrical Engineering & Computer Science  IEOR = Industrial Engineering & Operations Research |
| **Specific Skills Required**  (i.e. *C/C++/C#, Python ,CAD, Robot Kinematics, MATLAB, Excel Financial Modeling, etc.*)  The more detail provided here the better team match you will receive. | C, C++, Java, Hadoop, Perl/Python, |
| **Coursework**  (Indicate any recommended/required prerequisite/co-requisite classes) |  |
| **Industry Advisor(s)**  **Name, Email, Phone Number**  \*If this is a closed model an Industry Point Person from your organization is required for the duration of the project and must be available to advise the team on a regular basis and provide all necessary resources | Manjunath Mittha (NetApp business perspective)  [Mittha@netapp.com](mailto:Mittha@netapp.com)  408.218.1414  Depending on the projects, the technical advisor will be different and will engage the team to meet set goals |
| **Faculty Advisor(s) or Academic Liaison**  **Name, Department, and Email**  \*If this is an open model the Faculty Advisor or Academic Liaison is the primary party responsible for the advising and guidance of the capstone team, including providing all the necessary resources | NA |