Proposal for IITP-Purdue Summer Program 2018
Prepared by Eric T. Matson, Purdue University
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Abstract

The IITP-Purdue Program 2018 course will consist of a 6-week program for 30 students to integrate Korean students in America for an international project experience with practical project work, with a specific focus on global work experience. The end result is skills acquisition and confidence to develop systems with an international and cultural perspective. The program will also have a large cultural element as the visiting students will learn to work with Purdue University students from the USA and around the world.

Objectives:

Korean students will learn about followings and motivate their career.

- More upgraded practical competence about students' major field.
- Benefit and method by experience with international company co-operative work.
- Cultural cross-training with American people and students for academic and social experiences, especially campus life at a large, American university.
- Potential for part term internships at USA companies during the visit (This is subject to availability of internships and desire of students to participate).

Fields of study (projects)

There are a number of areas of projects. With the idea of pairing the students with a enterprise to complete a significant project, we can extend the project list after the list of students is selected. More than one team may be able to work in the same area. Examples of projects are:

- Internet Of Things (IOT) interfaces and devices
- Data Analytics
- Robotic software development
- Embedded S/W for cyber-physical systems
- Web development
- Mobile web application design and development
- Big Data
- Virtual reality

The projects will focus on technical areas of artificial intelligence, information convergence, IoT and robotics and sensor systems. The projects will be focused on developing

entrepreneurial skills, interpersonal skills, technical skills and working in an international setting for development of confidence.

Purdue Capability and Organization Involvement
Purdue University is a national leader in the development of commercialized enterprises from academic intellectual research.

"Purdue has long been a national leader in commercialization activities. The Association of University Technology Managers ranked Purdue No. 6 nationally for its commercialization successes in the 2010-11 fiscal year. Purdue, through its research foundation, had 11 startups in the period. In the past 15 years, Purdue faculty and the Purdue Research Foundation are credited with spinning out more than 75 startup companies and licensing hundreds of technologies to industry." (Purdue.edu)

To understand the full breadth of commercialization capability at Purdue, see the following link: http://www.innovation-entrepreneurship-purdue.com/

There are a number of organizations at Purdue and the local community that will be involved in this project. The following list is representative of the commercialization capacity at Purdue University. This list does not include all of the startup organizations which will be visited during the 4 week course:

Within Purdue University:

- *Computer and Information Technology*: This is the department at Purdue which is organizing the program.
- *Purdue Center for Robotic Innovation, Commercialization and Education (RICE)*: This is the research and engagement organization at Purdue which is organizing the program.
- *Purdue Entrepreneurial Leadership Academy*: The Entrepreneurial Leadership Academy is a resource support program for Purdue faculty who have entrepreneurial interests. The goals of the program are to: increase technology commercialization on the Purdue campus through education about the resources and support available at Purdue and the Purdue Research Park; enhance the capabilities of faculty who are interested in leading interdisciplinary research programs, centers, and partnerships that might lead to translational activities; support faculty who are interested in developing entrepreneurial courses or research projects; create a network of faculty with shared entrepreneurial interests; and introduce faculty to discussions about leadership skills and contribute to the cadre of the next generation of faculty leaders.
- *Purdue Entrepreneurship Academy*: The goal of the Purdue Research Park Entrepreneurship Academy is to provide innovative math, science and technology-based business and life skills that empower young people, and offer them unique opportunities and real-world experiences. http://purdueresearchpark.com/academy
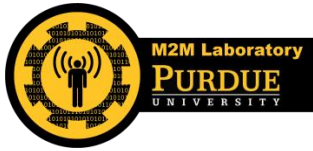
- *Purdue Research Park*: http://purdueresearchpark.com/ Today the nearly $1 billion Purdue Research Foundation manages and licenses Purdue's intellectual property, accepts gifts, administers trusts, acquires property and performs other services helpful to the University. In 1961 the Foundation established the Purdue Research Park. Today the Park network has four locations, 236 companies with more than 4,200 jobs. With more than half a million square feet dedicated to incubation, it is the largest university-affiliated incubation park complex in the country. As a result of the Park, Purdue is viewed as a major player in commercialization and economic development in Indiana. The Park network helped build a powerful case that higher education is pivotal to any state strategy in pursuit of the idea economy. With that focus, we contribute to Purdue's strategic plan of "Discovery with Delivery." It is the first of its kind compiled for the Purdue Research Park and represents 50 years of hard work and dedication. As you will read, the results of this study are impressive:

  - $256 million investment in the Park facilities and infrastructure from 1999 to 2010.
  - $1.3 billion economic impact for State of Indiana.
  - $48 million contributed to State and local taxes.
  - $49 million in Federal research and development grants for small businesses brought to the State since 1987.
  - Combined, the Park is a top 20 employer in the State.
  - High-tech, high quality jobs paying an average annual salary of $63,000 – 65 percent higher than the Indiana average.

- Burton Morgan Center for Entrepreneurship: The Burton D. Morgan Center for Entrepreneurship fosters the understanding and application of entrepreneurship with faculty and students across the Purdue campus and with stakeholders throughout the State. http://www.bdmorganfdn.org/purdue

- *Purdue Research Foundation*: http://prf.org/ ince 1930, nonprofit Purdue Research Foundation has played an important role in helping Purdue become a world-class university. As we gathered feedback from our client companies and gained additional confidence from our faculty-entrepreneurs, we watched our technology transfer, business development and incubation programming garner Purdue numerous honors and awards. On behalf of Purdue, the foundation: 1) manages gifts, bequests and endowments; 2) makes funding available to faculty, staff and students to aid in scientific investigation, research or educational studies; 3) acquires, constructs and improves Purdue's facilities, grounds and equipment; and 4) manages intellectual property developed at Purdue.

Participants (and project group formation)

The class will optimally have 10 Korean students mixed with a group of Purdue students. Each project team will consist of 5 Korean students Purdue students and company personnel, depending on Purdue student availability. This will selected by interest and basic organization strategy.

Project (program)

The schedule will start when in June and run for approximately 6 weeks during the program. Each team will have:

- 5 students, including team manager (manager is self selected by team)
- Company or technical sponsor
- Faculty advisor
- Student will be given preparation orientation prior to them arriving at Purdue on both the Purdue environment and the specific projects to prepare.

In good project management practice, each team will give weekly reports and meet with the faculty advisor and project team.

Program Schedule

Arrival and Orientation:

- The students will be checked in to Avenue South apartments..
- Oriented to Purdue and the surrounding community.
- Given food cards, recreation center cards, and internet access for the campus area.
- Each student will be given requirements on starting their business plan.
- Will have an orientation meeting.
- Discuss safety plans.

Each week will have a specific schedule of:

- Workshops with the individual participating agencies at Purdue and external to Purdue.
- Lectures on advanced but practical topics in technical areas.
- Visits to IT and related companies.
- Meetings with faculty and coaches.
- Fridays will be primarily left for the students to do their own investigative and intellectual work to prepare their projects.
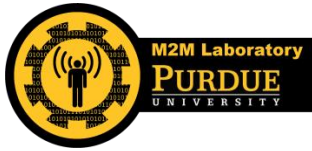
Finale
- The students will gather for a seminar where each will present their project accomplishments in an open session.
- Students will present their accomplishments and results to their company sponsor, possibly requiring travel to an alternative site.
- Each student will be given a certificate for the program with Purdue logo

Seminars and learning

As the usage of cyber physical systems is becoming an everyday part of IT, we will teach seminars on technologies that are not only direct for the projects, but also good in general sense of IT CPS. Some seminars are:
- How to build with your hands (For development of prototypes)
  - Mechanical
  - Electrical
- 3D design and 3D printing
- Applied networking building and analysis
- Development of a test plan
- Development of a safety plan
- Sustainable device and equipment construction

As the number of technical classes in summer at Purdue are limited, we will focus on technical skills taught directly in the Korean Software Square for the outcome of giving each student confidence in building and becoming a "maker". These are skills typically not taught, or not taught well, in the classroom at a university. Given past IITP courses, we see the need to directly train students to build and make their designs translate to reality.

Expected final results

Each team will have a specific set of outcomes and expectations. The formal expectations are:
- Initial project abstract.
- Management report.
- Technical design document providing technical details of their plan and how they plan to go about solving the problem.
- Final documented report, in specific format, such as IEEE, etc.
  - We will push to submit these to a conference for potential publication.
- Presentation of report in formal seminar.
- Weekly status reports.

- Analysis of what went right and wrong within their project.
- Feedback describing ways to improve the program.
- Portfolio at end of project.
- Faculty advisor and business customer will also provide written feedback evaluating the performance of the team.

Student selection

Korean Students

Will be select based on their preparation and interview. University staff, In Korea, will collect the applicants decide the final entry by paper or interview, with Purdue help, if necessary.

The selection criteria will not include any specific exams such as the GRE, TOEFL or TOEIC. No formal exams will be required for this exchange program.
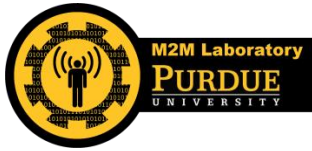
Certifications

All Korean students will be given certifications of completion, on Purdue stock, at a formal ceremony. This will occur the final week of the term.

Planned budget

Expense Summary	
Meals	
Housing	
Transport	
Travel - Foreign	
Supplies and Equip.	
Technical Course	
Personnel - Grad Staff	
Personnel - Faculty	
Subtotal	**$156,056.51**
MTDC (Overhead 28%)	13,909.09
Total	**$169,965.60**

The most significant budget items will be housing and meals.

- *Meals*: Students can eat at the Purdue dining halls as part of their dormitory stays. The quality and mix of food is very good. Due to the diverse, international student population, there are a lot of good food options for the students using this option.
- *Housing*: Students will live in university housing at Hawkins Hall. This will give them a real American student experience.
- *Transport*: This is transport to and from the Chicago airport and local visits taken during the 6 weeks of the program.
- *Travel Foreign* – Cost of travel to interview/planning in Korea.
- *Technical Course* – Cost to cover the technical courses and instructors.
- *Supplies and Equipment* – Funds to develop project materials for the students.
- *Personnel - Grad Staff*: We will fund research assistants, to act as the coordinator and work technically with students, for the course. This graduate student can assist the students and also share their experiences as a Purdue student.
- *Personnel - Faculty*: Time allocated for faculty to conduct the projects, advise students and arrange all company interactions, project visits, events and other activities.
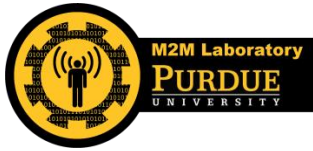
- *MTDC (Overhead)*: Because the participant costs are not charged overhead, the real overhead for this project is about 9%, instead of the nominal rate of 28% off campus rate.

Social Experience

The most significant part of this program is the academic/technical element. The social aspect is also very important. As part of the program, we will schedule social events, such as the following:
- Dinners with faculty and students at Purdue.
- Interaction with student organizations.
- Local and regional attractions.
  - Canoe trip on Wildcat Creek
  - Aviators Baseball Game trip
- Specially planned parties for the program.
  - Trip to Chicago or Cincinnati
  - Cookout party at Eric Matson's house
- We will purposely leave a many weekends open so the students can travel locally to nearby cities such as Chicago and Indianapolis.

Student Living

Avenue South Apartments are beautiful modern apartments with every possible amenity and will provide an excellent living experience. The students will live in the Avenue South Apartments with 4 per apartment.   Each student will get their own bedroom and each 2 student will share a bathroom. Kitchen and living areas will be shared by all 4 students in 1 apartment. These facilities provide all furnished living needs, such as:
- Beds
- Linens
- Wireless/internet
- Large flat screen television
- Kitchen
- Furniture
- Laundry facilities
- http://live-theavenue.com/?utm_source=google&utm_medium=cpc&utm_term=the%20avenue%20west%20lafayette&utm_campaign=The%20Avenue

Food and basic subsistence

Students will be given a budget each week for food and essentials. They will get some money on their BoilerExpress card which can be used like a credit card all over campus. They will also be given some budget so they can buy theor own food at Walmart and cook at their apartments.

Below are pictures of the Purdue dining courts.

Internet Access

Students will be provided with wireless internet access across all of Purdue's campus and in Hawkins Hall living residence. Plus, many places in the community have free wifi. Many areas of the city also have wifi access.

Transportation

Students can ride the City Bus system for free. Avenue South also has a direct shuttle to Purdue, next to the Korean Square which also stops at Walmart.

Visa

As the students will stay less than 90 days, they can use a simple visa type.

Recreation

Students will all be given a pass to visit the Purdue recreational facility during the entire length of their stay. This is a new student facility for sports, fitness and recreational activities. Below are sample images of the recreation center.

Purdue also has two golf courses on campus. As business is often done on the golf course, we encourage the students to play golf at Purdue. If they have not played golf before, the can take lessons very economically and learn to play. The courses are relatively cheap. Below are sample images of the Purdue golf courses.

Summary
The project will span work done over two continents with very different business practices, risk-averse behaviors and cultures. The participant's experience will offer interactions in countries with very diverse perspectives, operations, technology and norms of business. The main idea is to create leaders that can adapt to global business environments and successfully work in global enterprises over a large span of differing markets. The participants will gain the diverse experiences in research, technical development and product development.

This project is not only to create an environment of international collaboration for the development of software products and technology. It is not just an education program, but in total is an human resource development program to create a community of forward-thinking, global software leaders and companies. Given that the primary participants will be potential South Korean students, it will provide a gain to the South Korean economy in taking a lead in software technology development and commercialization.