

# Project Heimdall | Mid-scale Positioning System

Individual Design project – UC Davis – California, 95616

## ESSC Microgrants

May 13, 2015

UC Davis  
One Shield Ave.  
Davis, CA 95618

Dear Officer,

We are writing to apply for UC Davis Engineering Student Starup Microgrants Funding Program, looking for funding opportunity to make our idea to real.

## Team: PIEC

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Jonathan G. Tao: Junior year EE & CE double majors, will graduate at June, 2016

Yi Lu: Senior year EE & CE double majors, will graduate at June, 2015

Hengjiu Kang: Junior year Electrical Engineering major, will graduate at June, 2016

## Summer plan during 2015

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Jonathan G. Tao: TBD

Yi Lu: Because of being graduating during summer 2015, Yi is looking for career opportunity at California.

Hengjiu Kang: Registered summer session I at UC Davis. Will be in Davis till Aug.11 2015

## Abstract

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We believe that virtual-reality is the next generation of consumer electronics, or, the next generation of our perspective to this world. Google glass from Google, Hololens from Microsoft and Oculus Rift from Facebook, all of those headset displays, including Razor Hydra, give the real world a new dimension: Cyber World, or Virtual World. For this future, a precise positioning system is critical to setup a universal coordinate system. We already have GPS for global positioning and iBeacon tech for in-door positioning, however we need a street-scale positioning system serving for public users. Many small-scale positioning systems are based on RF, like Decawave Company. Our idea was coming from laser galvanometer and laser communication system. By modulating information into laser beam, end-device can decode its absolute coordinate.

The most important potential customers are those who are using virtual-reality devices, and this technology is also useful in industry, tracking products and components.

We have not start the project yet, but we have thought about it for years, and we decided to

declare this project as our individual senior project. Additionally, Hengjiu Kang has developed a basic laser communicating prototype boards during Summer 2014 in professor Xiaoguang, Liu's lab. The whole system has three divisions: Hardware design, software design and real product (Smart phone App). We plan to do them one by one in each quarter. Microgrant funds will be used to buy developing/Evaluation boards, and research components, including PCB fabrication cost.

Yours faithfully,

**Project Heimdall**