

# *Come to the Promenade on the Peninsula- The hub of technology in the South Bay*

## **Summer at PVNet Begins!**

**Week 1- 6/16/16**

Summer has begun, and classes are in full swing at PVNet! This week was a great start to our summer program. The students jumped right in, programming robots, using 3-D printing pens, building video games, creating animated models, and assembling prosthetic hands. We also welcomed our new interns this week! Everyone at PVNet is very excited for all the learning and fun that this summer will bring. Stop by our location in the Promenade to see our cool tech, and sign up for classes.

### **STEM University: College-level fun (ages 7-12)**

These kids are smaller than your average college student. This week at STEM university, our students experimented with Ozobots, 3-D printing pens, and LittleBits.

Don't know what any of this stuff is? Read on!

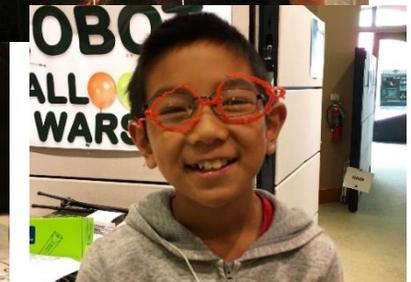
#### **What are Ozobots?**

Picture small, round, and powerful robots measuring about one-inch in diameter. They are easy to program and great for introducing kids to computer science and STEM. First, the students learned how to program the tiny Ozobots to flash their colorful lights and roll around the table in patterns, using Java Script block-based coding on the computer. They were excited to watch the bots perform their commands, and held both fighting and dance battles with the bots.



#### **3-D Printing Pens**

Imagine a 3D printer that you can hold in your hand and draw with. After having fun with the robots, the students moved on to the more artistic pursuit of using 3-D printing pens to create both flat and free-standing designs. Plastic filaments were first fed into the pen (extruded), and once melted, came out of the nozzle in a thin thread. Armed with creativity and patience, our students began learning how to properly use their pens by tracing lines on paper. They then progressed to drawing flat pictures, and basic 3-D objects. After some trial and error, the students were able to conjure up copters and vehicles in thin air. Their focus was amazing!



## Littlebits

Last but not least, the STEM university students experimented with LittleBits, which involves electronics, coding in Arduino, and robotics. LittleBits are electronic building blocks that snap together magnetically, allowing the user to invent anything that they can imagine. Each module is either an electronic circuit or switch, and has a unique function. When the modules are snapped together in a sequence, they form a circuit. LittleBits are great for introducing electronics to kids and other beginners. The system supports ages 7 – college. The students enjoyed creating their own inventions and making a large variety of sounds play from their devices.



## 3-D Modeling and Animation: A virtual world of their own (ages 10 & up)

Virtual reality is already a 11 billion dollar industry, offering many new careers. This week in our 3-D modeling and animation class, the students used Autodesk Maya, a powerful 3-D computer graphics software. Maya is commonly used to create interactive 3D applications including video games, animated film, TV series, or visual effects. The students assembled their own scenes, creating houses, trees, playgrounds, solar systems, and soccer goals on screen and then programmed their designs to run in moving, looping reels. Their creativity, problem-solving skills, and attention to detail helped them overcome challenges while realizing their designs logically and artistically. Although their first models appeared in unassuming grey, the students quickly learned how to add color to bring their models to life!





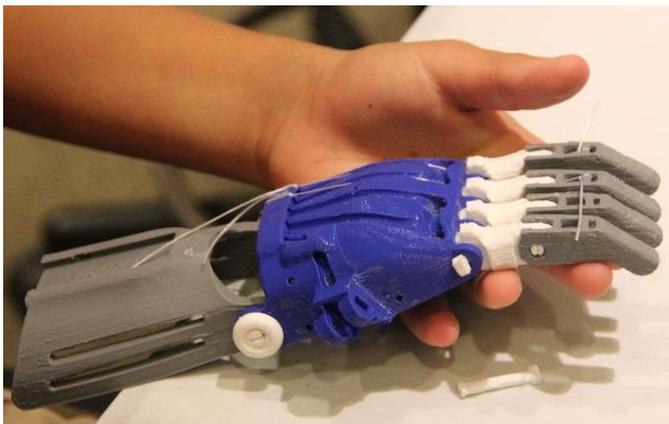
### **Video Game Design: Play your work (ages 10 & up)**

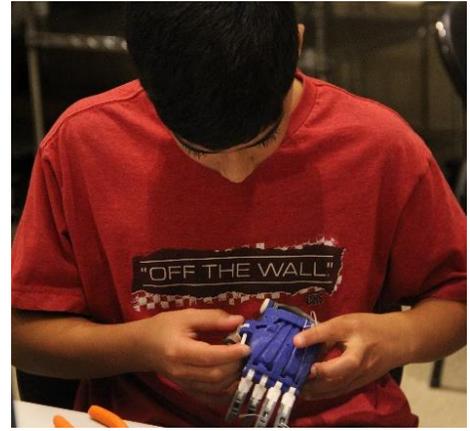
In this class, students learned how to design and program for work in education, engineering, and every conceivable industry, including video game design. Students used the industry-standard, professional game engine Unity to create unique virtual worlds complete with hills, grass, and trees. Unity is a great software that can create both 2-D and 3-D games, and deploy them to multiple platforms. After first experimenting with basic first person and third person characters, the students took one step further and put spaceships in their worlds. They learned how to program their spaceships using C# and Javascript, writing simple movement controls and enabling their ships to shoot exploding projectiles.



### **Prosthetic Hands for Kids (ages 13 & up)**

This summer, PVNet, along with students and families, will work to build 40 prosthetic hands for kids. As a community we are supporting eNABLE Community Foundation's mission to enable any child or adult to receive a free or very low cost experimental upper limb prosthetic. e-NABLE is a global network of volunteers who use their 3D printers, design skills, and personal time to create free 3D printed prosthetic hands for those in need. They have provided over 1800 hands in over 37 countries. PVNet is very excited to be a part of such an inspiring mission. Our first sets of workshops were this week, on Monday, Wednesday, and Friday. The students sanded and finished individual components, which were printed on our very own 3-D printers, and assembled them to form the hands.





### New Projects:

We are undertaking many new projects this summer! Updates will continue on all of them over the coming weeks.

**PV Transit-** We will be creating short public service announcement videos to submit to the Palos Verdes Peninsula Transit Authority. PV Transit is the local bus service on the hill, and the primary provider of mass transportation in Palos Verdes. We are currently assembling our student team to film these videos, which, when approved, will be played in multiple languages on the PV Transit website, local news channels, and the buses themselves. High school students who are interested in working on these PSAs may contact PVNnet at [education@pvnet.com](mailto:education@pvnet.com) to find out if they have what it takes to join the team.

**Dog Prosthetic-** PVNet intern Tina is going to design and build a low-cost dog leg prosthetic that can be resized and replicated for dogs of all sizes. She is currently researching this project, and when ready will meet with an orthopedic veterinary surgeon to further develop her plans. Tina will learn much more about dog anatomy and we are very excited to support her project and see the results!

**3-D Sensors-** PVNet programming instructor, Peijay, is currently working with advanced Intel 3D sensors and will lead interns in a project to develop applications. The technology he is working with is applicable to vehicles, autonomous robotics, home security, interactive computer systems, and much more.

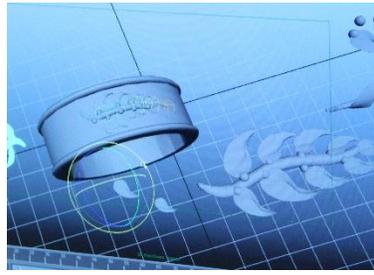
### New Interns

On Monday, our new summer interns came in for orientation! These interns will be able to explore all the technology available at PVNet, and take classes and workshops all summer. They will also work on new projects and assist in running PVNet.



## What are some of the things that our interns are doing?

**Lauren K.** is using Autodesk Maya to create delicate, detailed jewelry. She is currently designing a ring, complete with decorative foliage. Her final design will be printed with metal on the printers in our facility.



**Josh** will be helping instructor Tommy design and engineer 3-D games for our HTC Vive, a virtual reality headset system. He also assists with setting up PVNet's facilities and computers in the morning.

**Lauren L.** has been writing this newsletter. She will be learning about video production and animation in the next few weeks.

More updates about our interns will come, so stay tuned!

## PV Street Fair



Last weekend we were at the PV Street Fair! We had a great time talking to people at our booth and showing visitors our technology. Visitors flocked to our nearby facility to experience virtual reality systems such as the HTC Vive and Oculus Rift.

**That's all for now! Check back next week for more! Looking forward to a great summer!**

*Written by: Lauren Leung  
PVNet News Archivist Intern  
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