

ROCKET MAN!

A Journey to the Cosmos and Self-Discovery

By Bill MacKenzie

Jim Nadir, an Intel retiree, is a space enthusiast with an impassioned commitment to kids. His Intel career spanned 33 years, beginning with developing peripherals for the 8086. He subsequently developed the layout and circuits for Intel's first standard cell library and logic synthesis (pioneered at Intel Haifa), and later was the leader for the Pentium Instruction cache and the Itanium Data Cache. He then moved into New Business Development ASIC group and later pursued FPGA technology and other programmable fabrics for custom and small volume runs.

"The future cannot be predicted, but futures can be invented."

Dennis Gabor, 1963



Intel retiree Jim Nadir mentoring a student at Valley Christian High School in San Jose, CA.

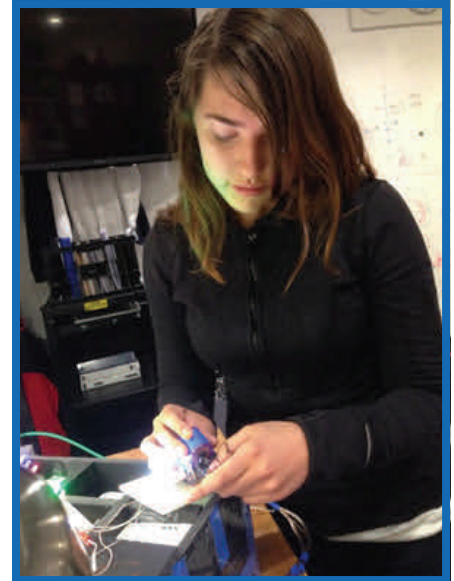
Since retiring, Jim has served as a volunteer at Valley Christian High School in San Jose, CA. For the past three years, Jim has been mentoring students in the school's unique advanced space program. The highly lauded program develops student experiments for the International Space Station (ISS), develops rockets and will launch the school's first satellite from the ISS next year.

The ISS Program is a STEM (Science Technology Engineering Math) outreach to schools around the world. Together with the partner schools, it has launched 73 experiments to the ISS over the past 6 years.

Enthusiastically devoted to mentoring, Jim has helped junior high and high school students put experiments aboard the ISS. He also participates in the school's satellite development and rocket programs. The rocket program launches high powered sounding rockets from the San Joaquin Valley and Black Rock, Nevada that go from two to eight miles into the atmosphere.

Allie is one of Jim Nadir's success stories. When they first met three years ago Allie was in 7th grade at Valley Christian Middle School. She was withdrawn, so shy she often hung back from even telling her teachers and classmates her name.

A teacher noticed that Allie had a natural curiosity and placed her in the newly created junior high ISS class, a challenging class attended mostly by A-level students. The class was a proof of concept that junior high students were up to the task to put experiments aboard the ISS. There, Allie began to go through a gradual metamorphosis, like a butterfly emerging from a chrysalis.



Allie working on a project

Her enthusiasm ignited, Allie joined the high school's International Space Station (ISS) program as a freshman. "She got motivated and charged up there and just suddenly blossomed into a very responsible young person," Jim said.

Once timid Allie, now a sophomore, recently made a video interview with NASA, describing her involvement with the ISS program. "She couldn't even tell you her name three years ago and now she's confidently standing in front of a camera," Jim said. The video ran on NASA TV in connection with a March 22, 2016 launch of a resupply mission to the ISS.

"One of the most exciting aspects to the ISS program is that students are given a chance to apply what is learned in the classroom to a project which will deliver unique results that can be applied to real world problems," Allie said.

"When I first entered the program, I was not particularly sure what my true passions were," Allie added. "I have found that I possess talent in both science and mechanical engineering. I know precisely what my skill sets are and what I am actually capable of, and I owe it all to the ISS program."

Andy is another success story. He was in the same junior high ISS class as Allie where he innovated new fluidic bags, spore injectors and pioneered the use of peristaltic pumps. His innovations propagated into the high school and went to other schools as well. "I found out that I could innovate and make decisions," said Andy.

His junior high experiment was presented at the ASGSR (American Society for Gravitational and Space Research) Conference in Pasadena where it won “Best Use of the Space Station” award from CASIS (Center for the Advancement of Science in Space), the sole manager of the International Space Station U.S. National Laboratory.



The Cygnus spacecraft sits on top of an Atlas V rocket ready for launch to the International Space Station on March 22, 2016.

Recent experiments studied plant growth, protein crystallization, radiation profiles aboard the ISS, the behavior of ant colonies, and bacteria growth in a microgravity environment.

Jim spends most of his time mentoring students developing experiments, guiding them on satellite development or developing rocket simulation environments. This involves helping with such things as how to design a transistor circuit, building reliable fluid bags, micro fluidic component validation, PCB design, mechanical planning, and software development.



Cape Canaveral Space Station

Valley Christian High School offers students the opportunity to specialize through its Applied Math, Science and Engineering (AMSE) program. The ISS Project provides students with the opportunity to conceive, design, build, test, integrate, and qualify computer-controlled science experiments that are then sent into space and are active on the International Space Station for a minimum of 30 days.



A United Launch Alliance Atlas V rocket carrying Orbital ATK's Cygnus spacecraft on a resupply mission to the International Space Station lifts off from Space Launch Complex 41 on Cape Canaveral Air Force Station in Florida on March 22, 2016. The Cygnus contained scientific experiments developed by students in the ISS program at Valley Christian High School in San Jose, CA.

Jim retired from Intel's Santa Clara site in 2007. He told his story to IRO in the hope it will inspire other Intel retirees who would enjoy "putting their DNA into space" while doing something meaningful for the next generation of students.

In particular, the school is seeking experienced technical people with engineering and mechanical skills to design circuits, develop microcontroller interfaces, help with the school's satellite program, work with 3D CAD mechanical designs, help students on high powered sounding rocket and ISS programs and to mentor students and instill passion for the sciences and engineering disciplines.

Want to learn more about volunteer opportunities at Valley Christian? Jim would love to hear from you at jnadir@sonic.net or you can contact the school's ISS director, Dan Saldana, at dsaldana@vcs.net.