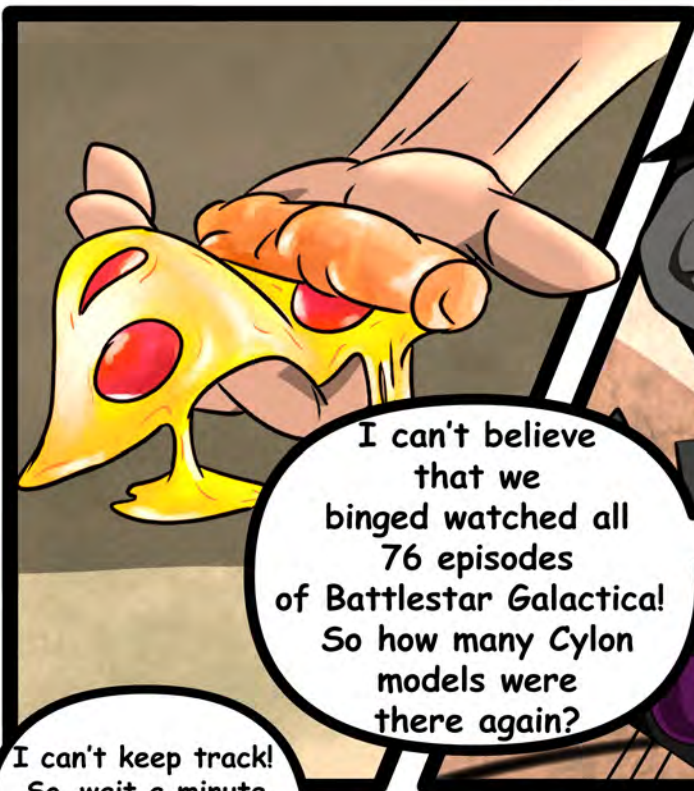


OPTOSIGMA COMICS

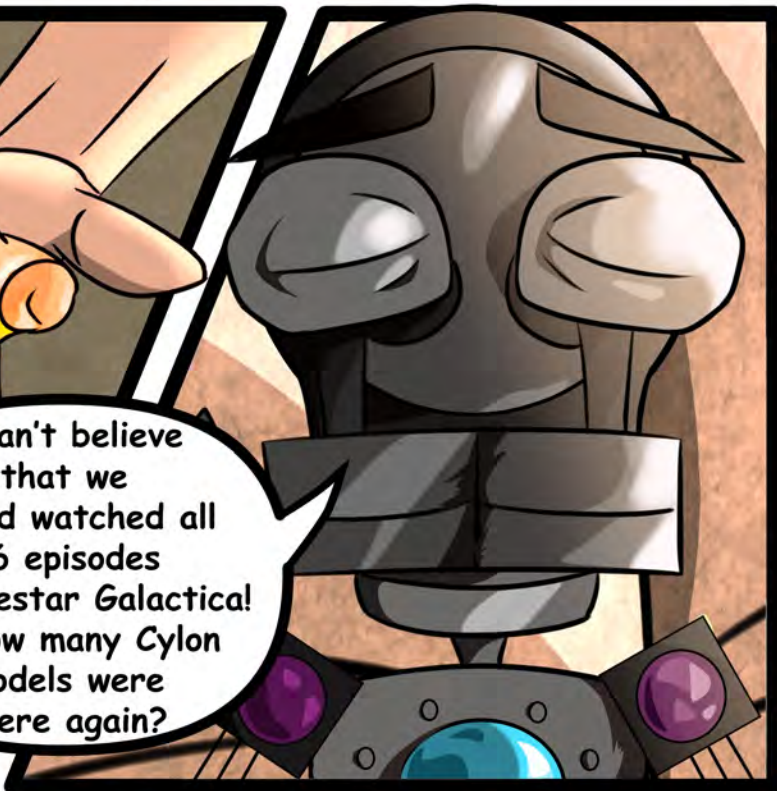
PROJECT AVATAR



VOLUME 2 - GENESIS OF THE CREW



I can't believe that we binged watched all 76 episodes of Battlestar Galactica! So how many Cylon models were there again?



I can't keep track! So...wait a minute... this whole series took place in the past before humans were on earth???





Hello, Rick Sebastian here...

Professor Rick, I got it!!! I got the Post Doc. Position in Dr. Lednev's Research Lab at the University of Albany!!!



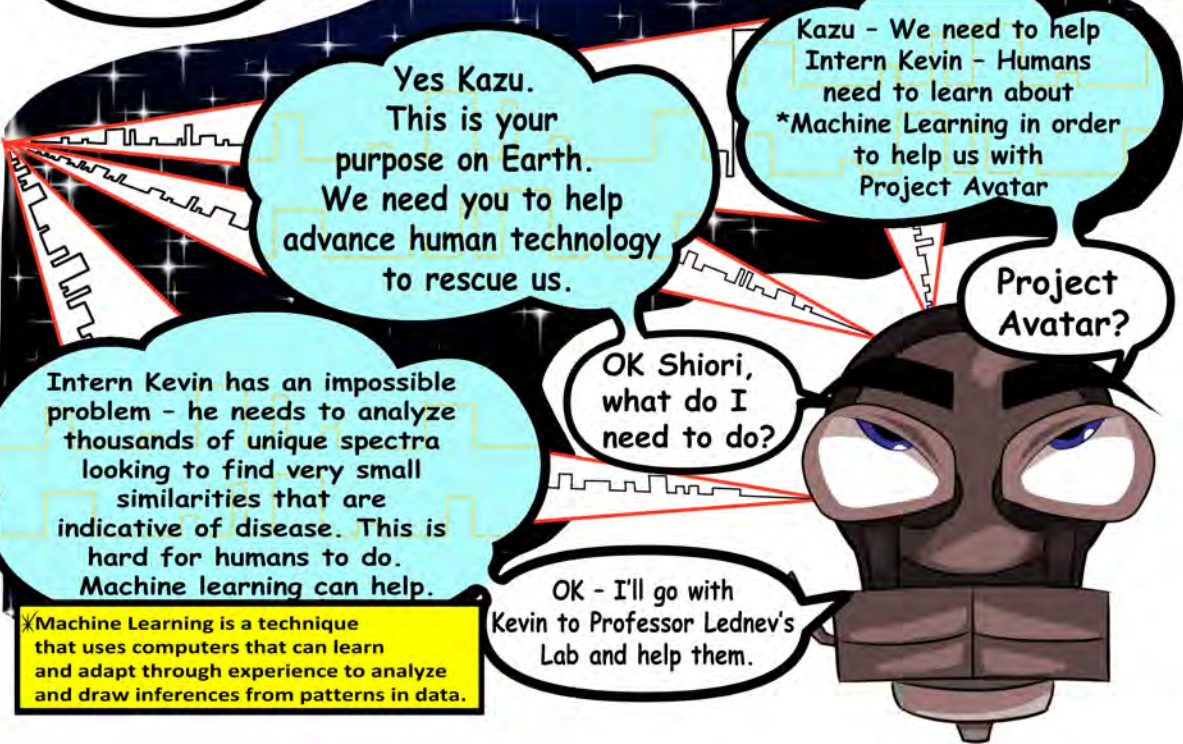
I'll be working with Professor Lednev and Alexis Webber in the lab and at their start-up company SupreMEtric analyzing *Raman Spectra. They analyze body fluids - like blood - and look for spectral differences.



Kevin! that is awesome! What will you be doing there?

Yeah - we will be evaluating thousands of blood samples to determine the spectral characteristics that identify people who have markers for Alzheimer's Disease. Then we can work to prevent it in the future

*Raman Spectroscopy is an analytical chemistry technique that uses light in a non-destructive manner to determine the chemical makeup, structure and molecular configuration of materials - like a fingerprint. It can be used to identify materials, improve process operations and shows promise for early-stage cancer & disease diagnosis.



Yes Kazu. This is your purpose on Earth. We need you to help advance human technology to rescue us.

Kazu - We need to help Intern Kevin - Humans need to learn about *Machine Learning in order to help us with Project Avatar

Project Avatar?

Intern Kevin has an impossible problem - he needs to analyze thousands of unique spectra looking to find very small similarities that are indicative of disease. This is hard for humans to do. Machine learning can help.

OK Shiori, what do I need to do?

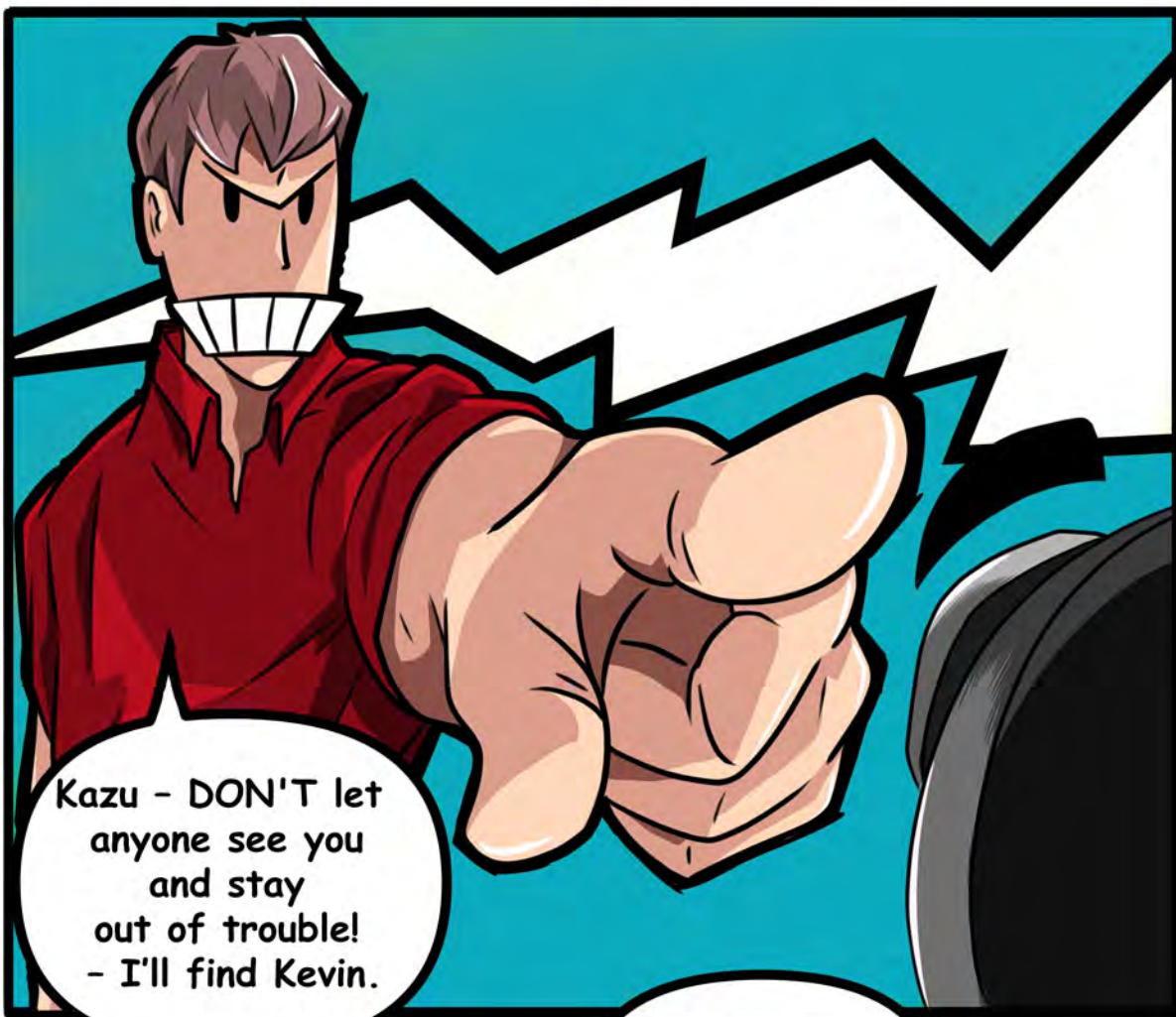
OK - I'll go with Kevin to Professor Lednev's Lab and help them.

*Machine Learning is a technique that uses computers that can learn and adapt through experience to analyze and draw inferences from patterns in data.



The next day at OptoSigma...





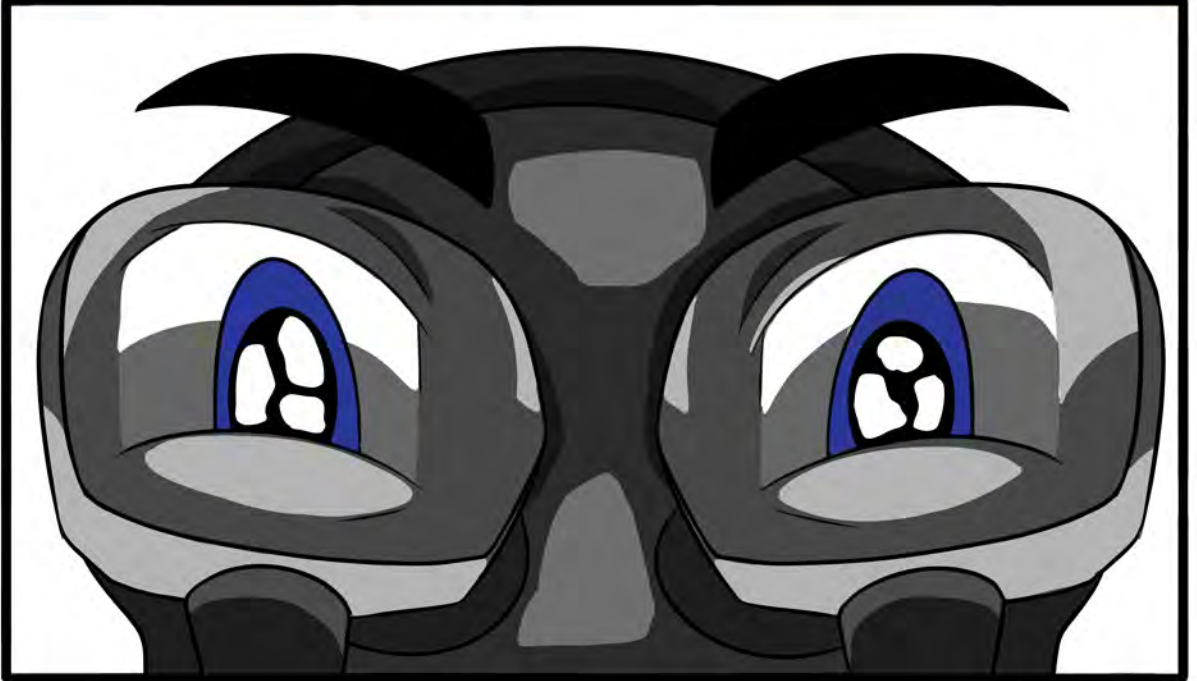
Kazu - DON'T let anyone see you and stay out of trouble! - I'll find Kevin.

Ok!
Gotcha!





Jackpot!
More parts!
I can
build now...





Super fun!
You can
create and build
anything with
these parts!

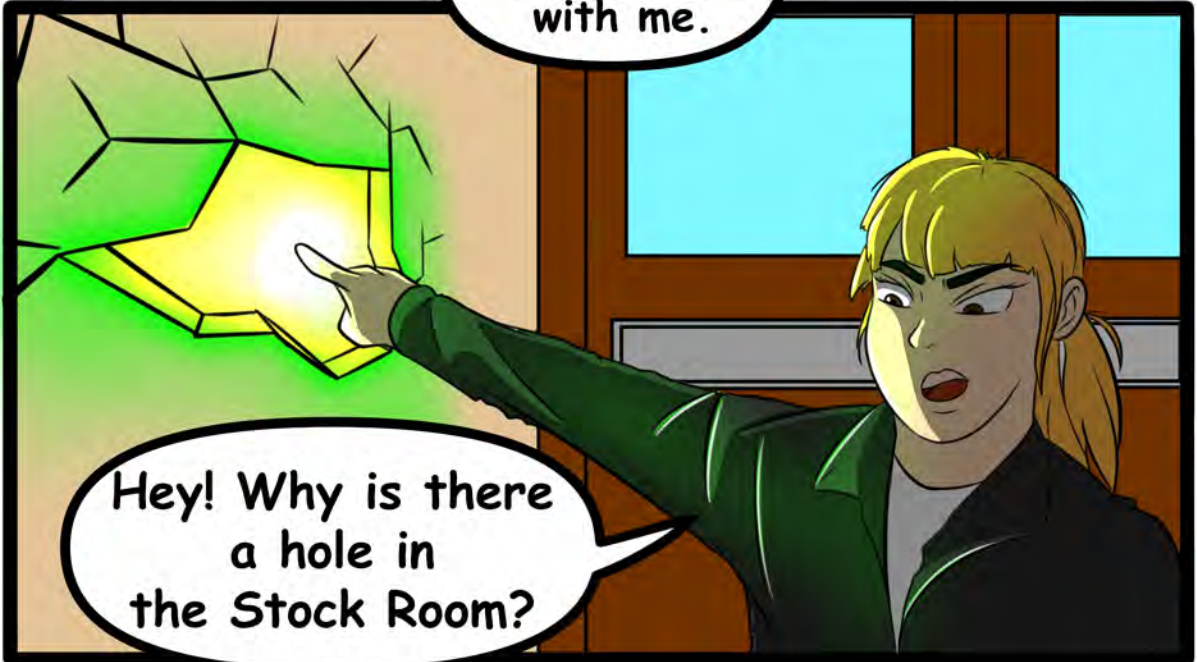


AAAAAA
AAHHHH
HHHHH!!!!

Shh...I'm Kazu
Don't tell anyone...
I get in trouble
with Professor Rick.



O..Ok. Your
secret is safe
with me.



Hey! Why is there
a hole in
the Stock Room?



We can't just leave a hole in the Stock Room. I need to get this fixed!



Gamma Ray Supernova overloaded the Laser when I was created. It must have cut a hole...



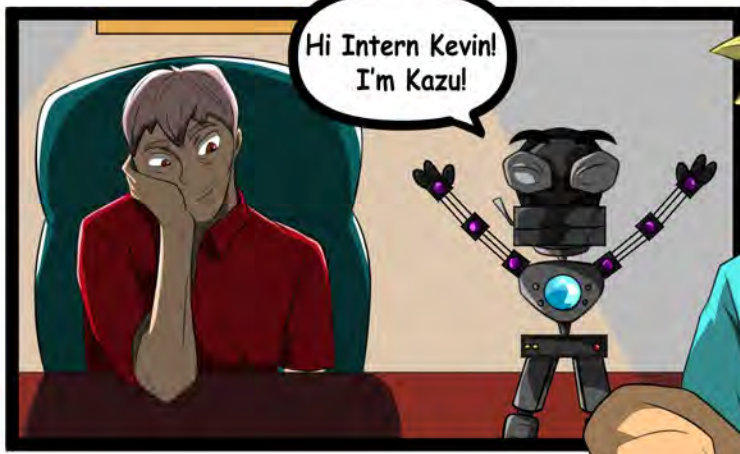
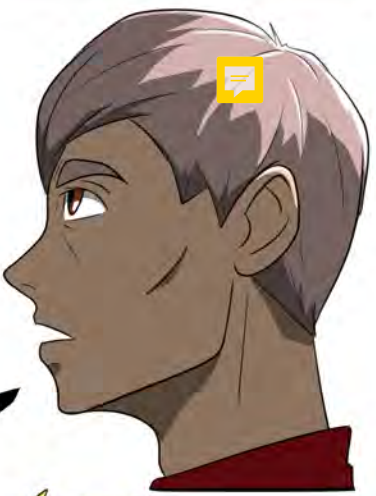
What is it Professor?

Kevin, I need to share something important before you leave for Dr. Lednev's Lab.

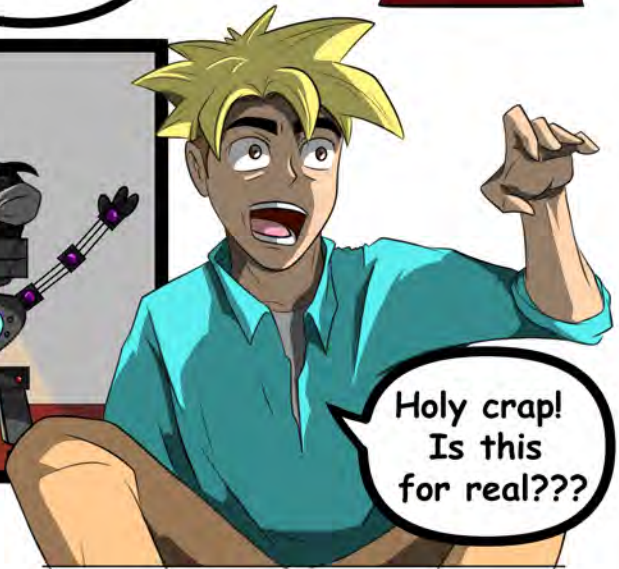
Kevin, remember when the lab exploded last week? Well, something strange happened... The parts from the experiment self-assembled into an intelligent being named Kazu.



Kevin, you can't tell anyone about Kazu. He helped solve Kalman's rocket fuel efficiency problem and now he needs to help you and Professor Lednev develop Machine Learning algorithms. You need to take him with you to SupreMEtric labs.



Hi Intern Kevin! I'm Kazu!



Holy crap! Is this for real???



Got it professor!
Don't worry,
the secret is
safe with me.

On the flight to
the University of Albany...

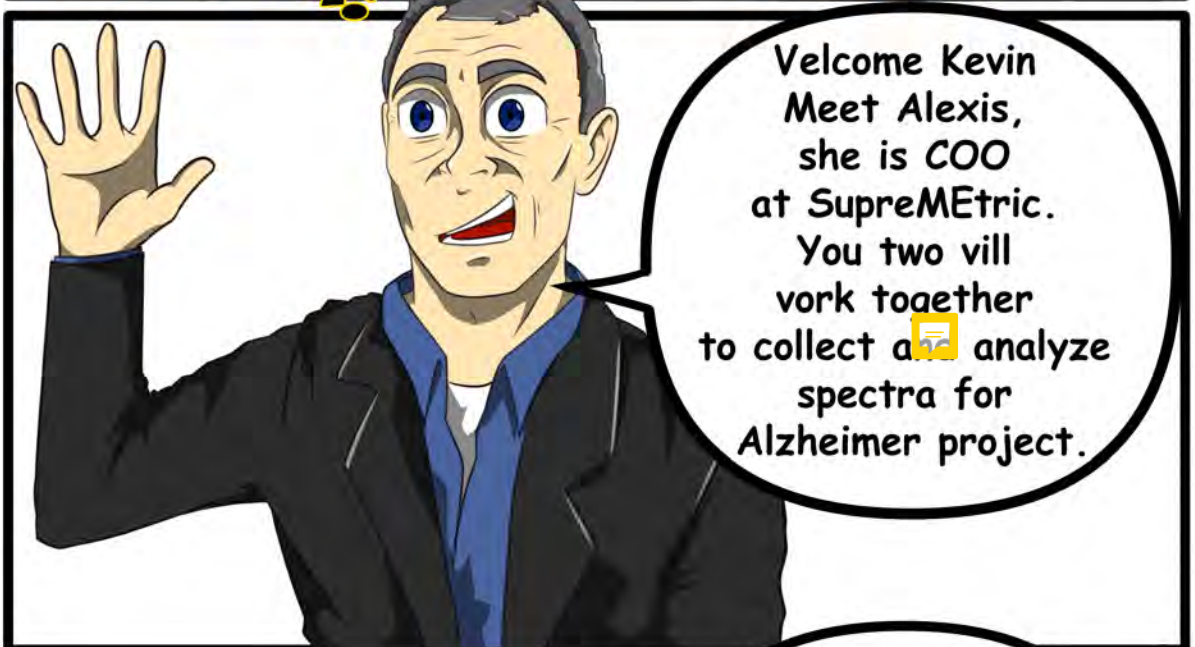


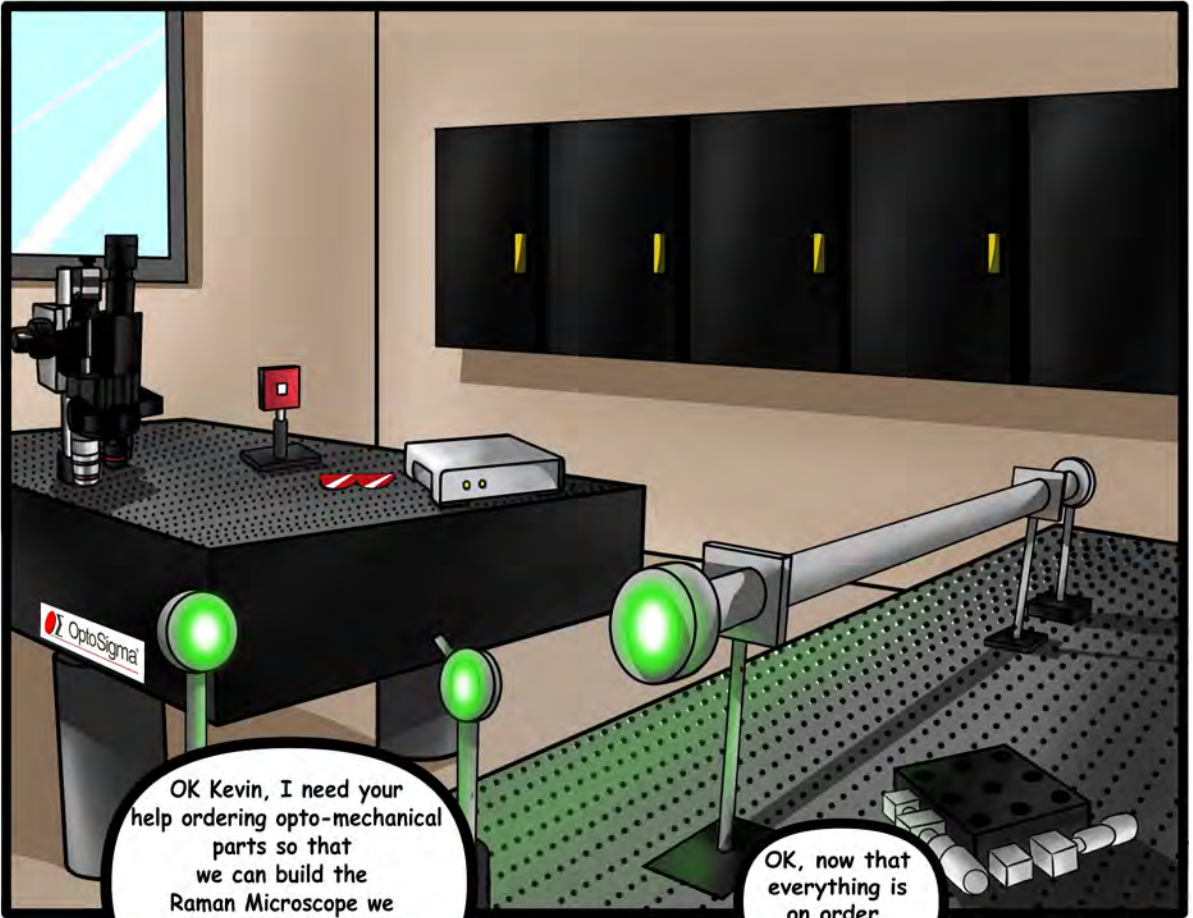
Kazu - Human engine
technology is nowhere
near what we need to reach deep space.
We will need to focus on helping them
develop better engines in order for
Project Avatar to be successful.

OK Shiori
but why
need engine?

Kazu, we will need humans to build
the GateRing deep in space to minimize
the impact of planetary gravity
so we need efficient engines to get there...
but let's worry about that later...
we need to focus on helping them
develop Machine Learning and
Artificial Intelligence for now.







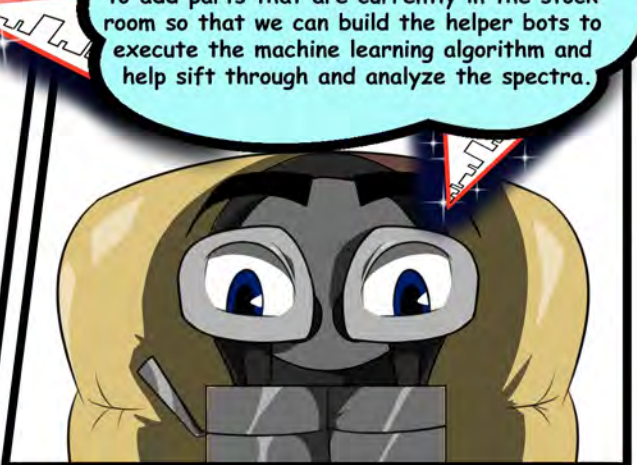
OK Kevin, I need your help ordering opto-mechanical parts so that we can build the Raman Microscope we will use to gather the spectra from the blood samples.

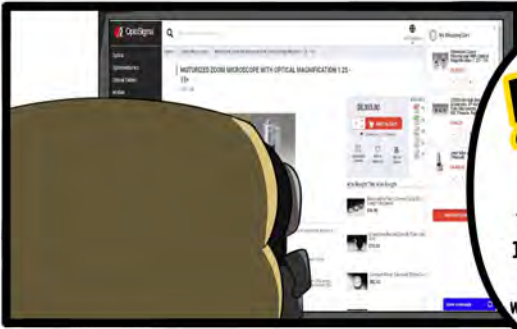
OK, now that everything is on order, let's get lunch..



No problem, We can get what we need on-line from OptoSigma.com

Kazu the OptoSigma Shopping Cart is still open. You need to add parts that are currently in the stock room so that we can build the helper bots to execute the machine learning algorithm and help sift through and analyze the spectra.

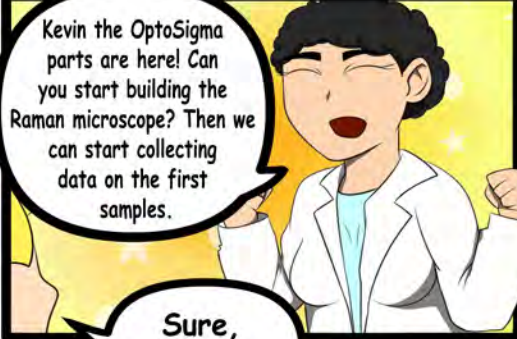




I wonder what is going on here. The parts are glowing...How strange. I must need to get my eyes checked... Intern Kevin sure will be surprised when he gets this package of goodies...



A few days later back at the SupreMEtric laboratory...



Kevin the OptoSigma parts are here! Can you start building the Raman microscope? Then we can start collecting data on the first samples.

Sure, no problem...



**RING!
RING!**



Kevin my man... I'm in Albany visiting the University. Got time for a visit?



Hey Mao! What's up dude?





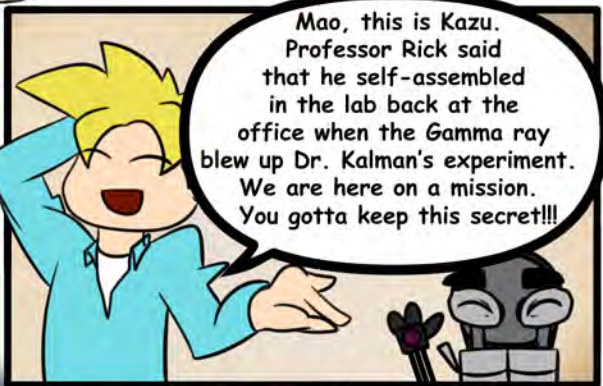
Sure, I always have time for you my friend. Come over now I'm just about finished building the Raman system for Alexis and Dr. Lednev.



Yo Kevin! I brought presents! New Yamamoto laser safety glasses straight from the OptoSigma stock room!



Whoa dude! The parts are glowing! And what is that???



Mao, this is Kazu. Professor Rick said that he self-assembled in the lab back at the office when the Gamma ray blew up Dr. Kalman's experiment. We are here on a mission. You gotta keep this secret!!!



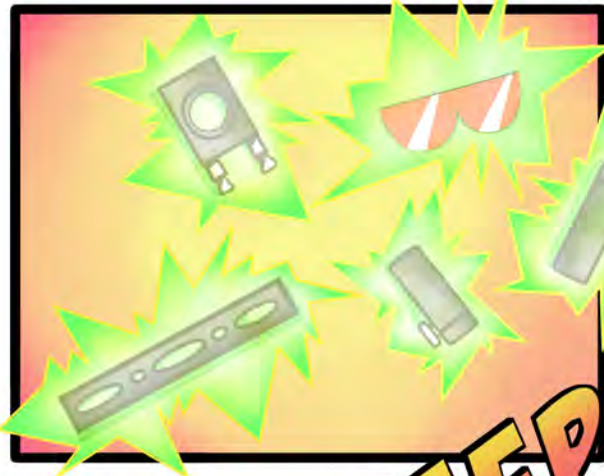
Trust me Kazu. We will need some helpers to show Dr. Lednev and Alexis how Machine Learning and *Artificial Intelligence can help search through the data to find the key spectral characteristics that are indicative of Alzheimer's disease.

Kazu, Tell Kevin and Mao to help you unpack the extra inventory parts and set them on the optical table along with the new safety glasses. Then snap your fingers.

Why Shiori?



*Artificial Intelligence (AI) is the development of computer systems that can mimic Human intelligence to complete complex and abstract tasks like visual perception & speech/pattern recognition. AI can be combined with Machine Learning to help a computer evaluate complex data sets and draw inferences.



Piles of Optosigma parts glow and self-assemble into Optomechanical Creatures..

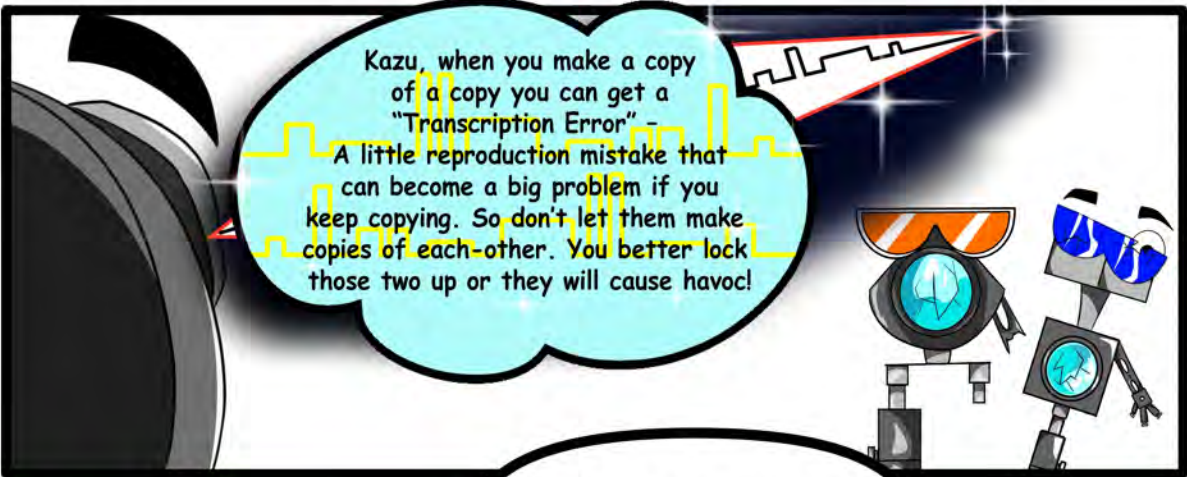


Cool! These little guys are awesome!
I need a whole Crew!



We could build a whole dance team...LOL but Kevin, I think that some of your "Crew" aren't quite right.





Kazu, when you make a copy of a copy you can get a "Transcription Error" - A little reproduction mistake that can become a big problem if you keep copying. So don't let them make copies of each-other. You better lock those two up or they will cause havoc!

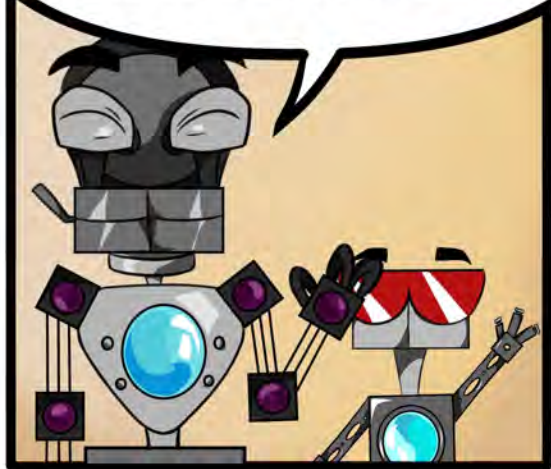


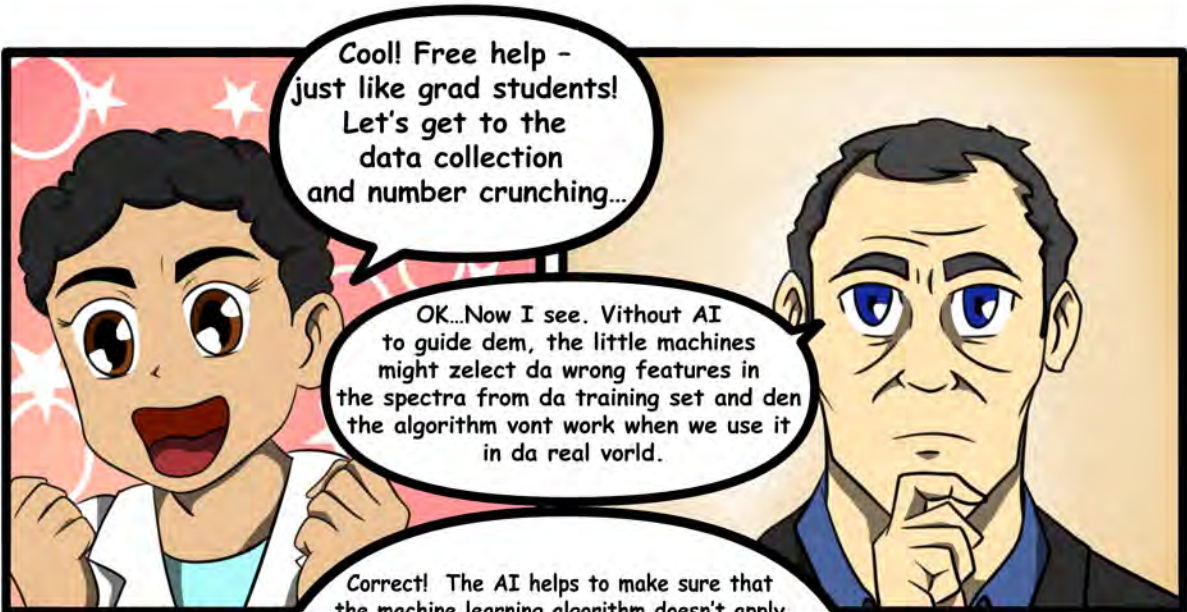
Dr. Lednev...Alexis... I can explain!



Kevin, vat is all dis? Dese little robots? And dis big one?

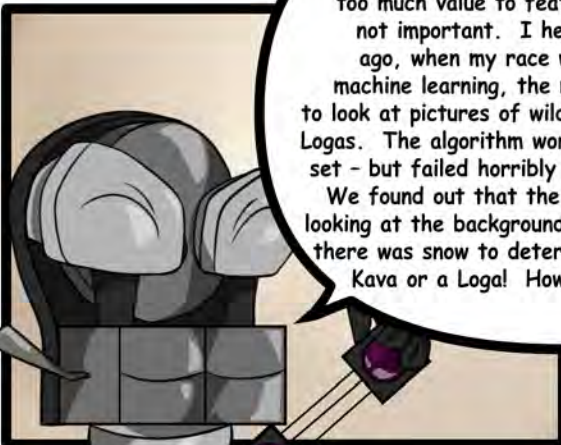
Hi...I'm Kazu. This is my crew. We help with experiment. You will have too much data to evaluate by yourself - you need machine learning and AI to help identify the small changes in the spectrum of the blood samples that indicate Alzheimer's disease. My crew will compare spectral data - I will supervise and direct. We will find the small differences in the data.





Cool! Free help - just like grad students! Let's get to the data collection and number crunching...

OK...Now I see. Without AI to guide dem, the little machines might select da wrong features in the spectra from da training set and den the algorithm vont work when we use it in da real world.



Correct! The AI helps to make sure that the machine learning algorithm doesn't apply too much value to features that are actually not important. I heard once a long time ago, when my race was first developing machine learning, the machines were trained to look at pictures of wild Kavas and domesticated Logas. The algorithm worked great in the training set - but failed horribly when put into practice. We found out that the algorithm was actually looking at the background of the picture to see if there was snow to determine if the image was a Kava or a Loga! How funny is that? LOL



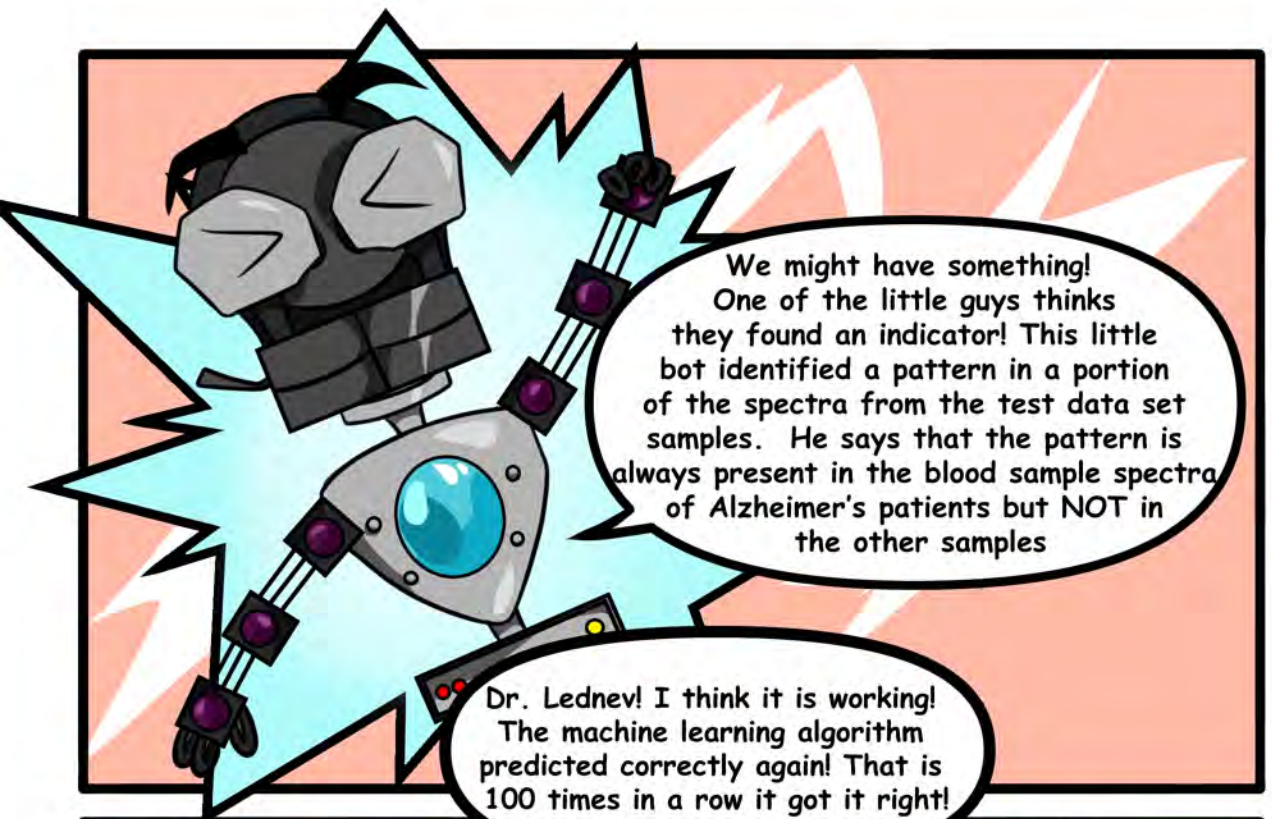
Vat is a Kava and a Loga?



A Kava is like what you call a Wolf. A Loga is kind of like a pet Dog - they are Soooo Cute! I always wanted one, but Shiori says NO!

MEEP!!
MEEP!!





We might have something!
One of the little guys thinks they found an indicator! This little bot identified a pattern in a portion of the spectra from the test data set samples. He says that the pattern is always present in the blood sample spectra of Alzheimer's patients but NOT in the other samples

Dr. Lednev! I think it is working!
The machine learning algorithm predicted correctly again! That is 100 times in a row it got it right!



Amazing! Lets test da algorithm with a different sample set to see if it still works!



Amazing! Ve have to publish dis vinding immediatly! Alexis, you start writing da paper. Kevin, you document da test setup. Kazu...you and I vill make zure this is not a Kava - I mean a glitch.



Later that Year...

Charles Mann



Awardee for 2022

Hello esteemed guests.
I'm Dr. Pavel Matousek from the Rutherford Appleton Laboratories and it is my great pleasure to introduce the Charles Mann Awardee for 2022 - We welcome Dr. Igor Lednev to the stage. Dr Lednev is being recognized today for his trailblazing research in the use of Raman spectroscopy and Machine Learning to identify indicators of Alzheimer's disease in blood samples.



FACSS PRESENTS
SCIX
2022



Charles Mann

Awardee for 2022

It is an honor to be given dis avard, and a truly exziting time to be vorking in da field of science. It is imp^ortant to recognize my team without whom I vould never have succeeded. Special thanks to Dr. Alexis Webber, our new intern Kevin and his friend Mao, and of course Kazu and his whole CREW. You all helped make dis possible.

Now vill you all pleze join me at da Gala?

SciX 2022 Gala Welcome!

What iz
with all
Ze carrots?

Wow!
He's good!
Does Mao
give salsa
dancing
lessons?

In
San Francisco,
he's known
as the king
of Salsa.

