

Silver Wolf Wushu

Business Plan 2018

INTRODUCTION

The Problem: On our Planet Earth hundreds of millions of human beings born with special needs due to genetic causes suffer pain; have poor health; lack a supportive social group; and have no life goals. The negative impact on families is profound.

One Solution: Teaching the venerable Chinese martial art of Tai Chi Chuan using smart garments and state of the art software so that students earn performance-based bachelor's and master's degrees where the coursework is similar to what a university student in China training to become a professional athlete would take.

Requirements: able to walk and want to learn

The Problem

Modern humans have about 24,000 protein-coding genes located throughout our DNA on 23 pairs of chromosomes.

We are frail organisms – in many cases one deletion, one mutation, one nucleotide repeat or one translocation will cause Alzheimer's, ataxia, autism, arthrogryposis, cerebral palsy, Down syndrome or another serious disability. There are almost 200 genes in 100 named syndromes in the autism spectrum alone. There are already more than 1400 genes in our more than 30 disability categories.

- The direct human cost is one individual who might have cognitive challenges, asthma, expressive language limitations (cannot speak), food allergies, seizures, tachycardia, and very early onsets of diabetes, heart disease and dementia.
- That means 1,000,000 people with these disabilities in California; 10,000,000 people in the United States; 55,000,000 people in China; and 250,000,000 people – about the population of Indonesia or Brazil - on our Planet Earth. That also means slightly less than 250 million families.
- Being in pain with poor health, alone and without hope is not much of an existence.

Our Solution

- We teach the venerable Chinese martial art of Chen Family style Tai Chi Chuan supplemented by cutting edge use of the Internet of Things using several kinds of sensors and a lot of software.
- Martial arts like Tai Chi Chuan often have canonical sequences of movements known as forms, sets or kata. The curriculum includes six unarmed sets and ten sets with weapons as well as nine Qigong routines, exercises with six Tai Chi tools, and formal meditation. Each movement gets a daily grade using international competition standards.

On an Individual Basis

The screenshot shows a Windows application window titled "SAITO - Daily Scores and Pain email". The interface includes a header with a student name "Cecilia J Zoll" and a date "7/8/2018". Below this are buttons for "Menu" and "Prior". A "Recipients" section has a checked "send to all" option and a list of names: "Zoll,Mailin Cheung", "Zoll,Peter F", "Chen,Soter Ming", and "Macias,Cristina x". A "Contents" section offers "Both", "Pain only", and "Scores only" options. A "Send" button is located to the right of the contents section. At the bottom right, a bar chart displays aggregated velocities of learning over 8 days, with values increasing from approximately 2 to 22.

Day	Aggregated Velocity of Learning
1	2
2	6
3	9
4	10
5	15
6	18
7	22

Our SAITO application runs on Windows, has about 200,000 lines of code, has almost 500 Windows forms, and the EXE exceeds 16 megabytes. On the form above the email to the parties on the left will contain the graph (lower right) of a week's aggregated velocities of learning (blue bars getting larger is good) and detailed pain telemetry and scores by set.

For Parents and Physicians

- The important use of the velocity of learning is parents and physicians have a quantitative basis for assessing changes in diet, sleep, logistics and medications. If the Tai Chi scores go up, the change was probably positive. Note that professional blind scoring is done biweekly by qualified judges.
- If genetic information (limited to the 1400 genes of interest) for a student is provided, it is possible to anonymously compare student velocities over time as a way to be informed about strategies for what to change.

Our First Smart Garments



Originally, we expected to put x y z location sensors in a garment known as a manteau or pi sha. Students would wear bio-sensors on their left wrist to measure heart rate, blood pressure and temperature. These can be used to predict most seizures. Pi shas could be quickly put on and taken off.

Then a doctor at Harvard e-wrote

He made a very convincing case that our measuring Tai Chi Chuan movements and comparing them to the movements of a Grandmaster in a similar garment was a **marvelous** idea, especially if students were following along to a video of the Grandmaster

BUT

Head movements during stillness (sitting or standing Wu Ji meditation) were powerful predictors of falls which were important in ataxia and osteoporosis.

So we added accelerometers

- mounted on a visor, baseball cap or simply on a wire called the diadem.
- we had intended to use the early minutes of class while students were meditating to validate all the sensors and their hubs. This opportunity was now gone, but we aggressively increased the number of threads executing in parallel before class and all was well.
- The claimed reliability and accuracy of early accelerometers was somewhat exaggerated.

Tai Chi Tools



We had intended to teach all students (from left to right) Tai Chi Ball, Bang and Ruler but not Bar.

A Student with Cerebral Palsy

- Was a little obsessed with his ruler the first time he handled it. We are flexible, so we gave him a carrying bag and allowed him to take the ruler home.
- His parents emailed us and we sent them a reply with a link to video of the exercises.
- His parents emailed us again the next morning. Their son had held the ruler all night. It was the first time he had slept through the night in seven years due to arthritic pain in his arms.

At about that time

- We had tried to relocate the wrist-mounted biosensors either to the right wrist or to an ankle. We were informed most such sensors are tuned to the left wrist.
- Some professional wushu performers and coaches and their doctors took an interest in our work. They suggested assigning individual homework.
- Different experts in China e-wrote to point out that ruler exercises need to be part of a balanced suite or progression.

We Had Already Decided



The solid wood Tai Chi Ball was too heavy, too expensive and too dangerous – a simple playground ball was fine.

Students disliked metal and

plastic rulers and bangs and loved the grain of real wood. We added more temperature sensors to arms and legs, and discovered we could measure the effort to perform movements and sets. And we could measure pain. For some students pain was frequent and severe and they had no words for it.

Faces and Hands get Attention

We had wanted to loosely monitor foot temperature but we discovered for some students there was a considerable amount of foot pain. Never recognized by anyone – except the student. We now include a variant of the tai chi bar



Our SAITO application and its database were gracefully growing to accommodate more sensors and more tools during class time of two hours per day.

Bachelor's Degree

1. bowing and saluting; seated WuJi style meditation, standing WuJi style meditation; traditional Chen family warm-up exercises; and additional exercises known as silk reeling
2. unarmed sets: 18 Movements, Lao Jia (= Old Frame, the signature set) and Cannon Fist
3. weapons sets: double batons, single saber, single sword, spear and staff (eyebrow height)
4. tai chi tools: ball, bar and ruler
5. Qigong sets (compiled by the Chinese Health Qigong Association): Ba Duan Jin (Eight Brocades); Yi Jin Jing (Tendon Washing); Wu Qin Xi (Five Animals Exercises); Liu Zi Jue (Six Sounds Breathing Exercises)

Master's Degree

1. unarmed sets: Xin Jia (New Frame), New Frame Cannon Fist and Xiao Jia (small frame)
2. weapons sets: double sabers, double swords, halberd, long (3 meters) pole
3. tai chi tools: bang, bent bang and long bang
4. Qigong sets: Da Wu (Joint flexion); Twelve Step Daoyin (Health preservation); Shi Er Duan Jin Yin (advanced sitting exercises); Taiji Yangsheng Zhang (a zhang is a wooden stick 48 inches long) and Mawangdui Daoyin Shu (therapeutic stretching).

HERON: An Electronic Diary



There were requests for recording the other 22 hours

Two Students – One Gene

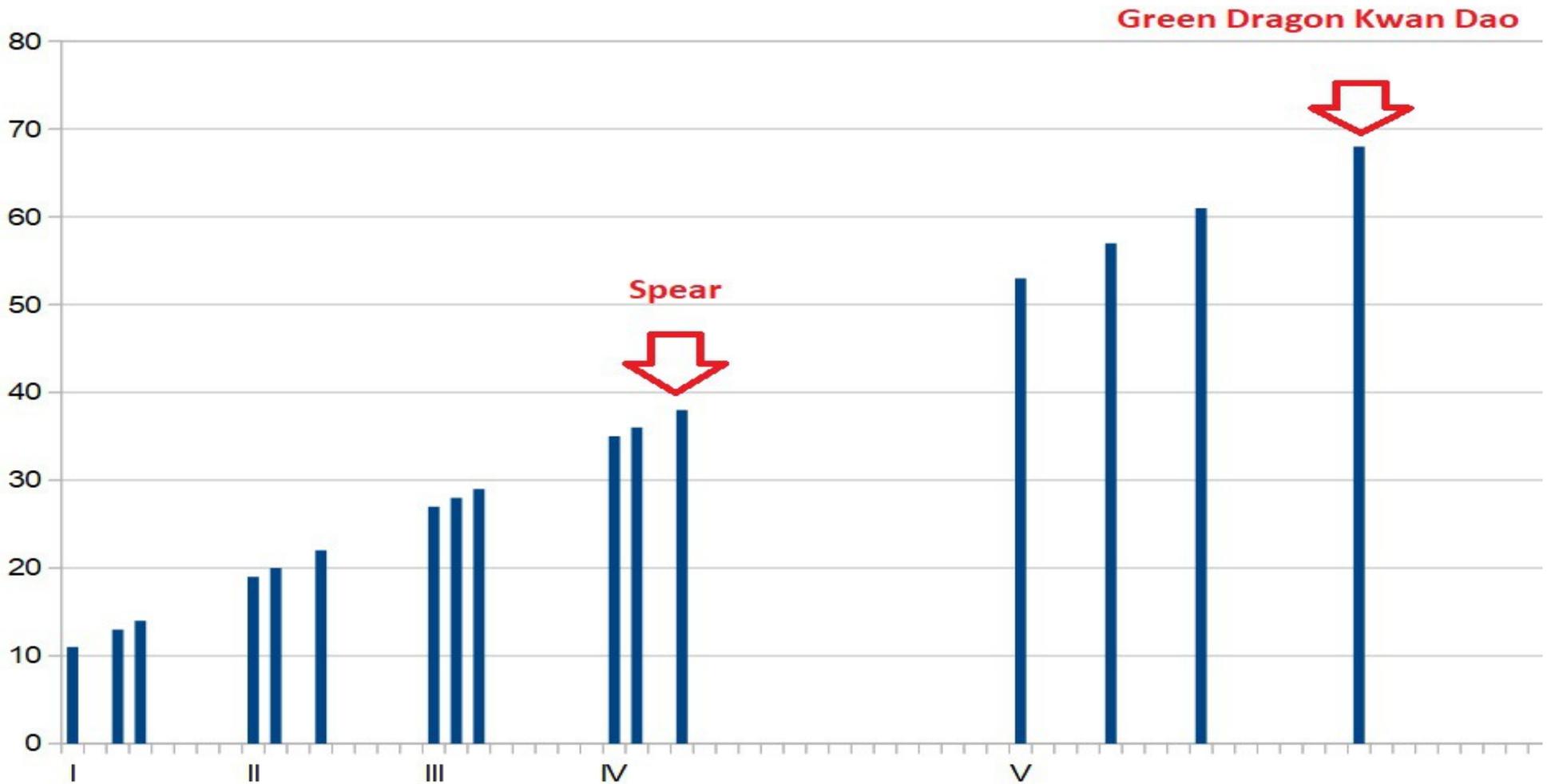
- By sheer dumb luck (for us) two students both had a defective ADNP gene which causes a type of autism known as Helmsmoortel-van der Aa syndrome.
- But they showed significantly different velocities of learning.
- It turned out they have two quite different mutations which meant that SAITO had to support not just genes but base pair changes within the genes. SAITO does NOT yet have support for epigenetic factors.

Pi Shas let sensors move too much



Note the bio-sensors on the left wrist. On the right arm is a sport sleeve like one might see on basketball or baseball players. Sensors are embedded on the medial and distal surfaces and the sleeves are worn on the arms and lower legs.

An Effort Gap



Note the gap between spear and halberd. We have made some interesting discoveries about sword and saber configurations, sequencing and accessories.

Financials

In the United States the social services agency that is responsible for people with disabilities varies considerably by state. In California there are 22 regional centers that often cross county lines. For children over 3 and under 22 the relevant school district, the regional center and the family agree to a written contract called an Individual Education Plan (IEP). About 15% of California children have such a plan. We would bill the regional center \$5.00 per hour (\$200 per month) based on validated attendance. We prefer students attend seven days per week (\$300).

Financials (continued)

Students would also have a family-controlled monthly allowance of \$50 for weapons, clothing and accessories. For students over 21 there is no school district and the contract is known as an Individual Behavior Plan (IBP). For both types of plans the disabled individual can make the decisions. The regional center or the school typically provides 3:1 or 1:1 aides who accompany the students and transport arrangements are negotiated. SAITO has specific support for social service agencies and schools.

Financials (continued)

Using the conservative choice of \$200 per month we have 16 students per class times three classes per day = \$9600 per month. We would charge a nominal monthly subscription for students who do not attend class physically but want their videos graded. We do not have much interest in making vast profits reselling weapons, clothing and accessories. The \$9600 has to pay for rent for 2500 square feet, utilities, insurance, supplies and teacher salaries. Teachers would be mildly encouraged to teach additional classes at night.

Monthly Expenses

\$200 tuition per student per month minus \$5 for the Chen Family Association dues and \$5 for the affiliated university and \$20 for outside expert video grading = \$170 per month x 48 = **\$8160**

\$2500 rent (\$1 per square foot; 2500 ft²)

\$ 120 insurance (general liability and specialty)

\$ 240 snacks and water

\$ 300 Utilities (internet, gas, electricity, garbage)

\$5000 Loan payments (six months only)

\$7860 total

Build-outs of Schools in Phases

- The initial location is arbitrary – we will use Contra Costa County in northern California as an initial location
- Phase 1: one school in Concord (population 122,067, the largest city in the county)
- Phase 2: schools in Antioch (east of Concord; population 101,118) and Richmond (west of Concord; population 103,161) and Danville-San Ramon (south of Concord; combined population 111,235)

Schools Build-out Phases (continued)

- Phase 3: twenty-five schools in northern California including San Jose, San Francisco, Sacramento and Oakland and 15 cities with over 100,000 people as well as locations such as San Rafael, Eureka, *Redding* and Alturas.
- Phase 4: fifty schools in southern California. Los Angeles and San Diego are special cases, but virtually all cities with populations over 100,000 would be included.
- Phase 5: about 225 additional schools nationwide

In the future

In addition to a horizontal expansion of more schools the SAITO software is designed to support both languages other than English (see our website – www.silverwolfwushu.com) and martial arts other than Chen Family Tai Chi Chuan. We note that building a collegiate master's degree program requires eight more canonical sets (16 total) whose movements have international judging standards. As far as America goes, there is nothing to say that neurotypical students could not obtain such degrees. We do not know if that would be true overseas.

In the future (continued)

Many families have already asked about a vertical expansion. This takes two forms: (1) day care where students have class from 9 to 11 and from 1 to 3 with lunch and low-key activities in between [possibly breakfast and three snacks] and (2) residential care where students participate in the day care and live in affiliated group homes. These are both very lucrative possibilities that merit exploration.

Technical Challenges

- It is likely HERON will be re-platformed onto something like Xamarin so it can be run on iOS and Android hardware. HERON will also need expanded language support (see below). To scale, HERON devices will need to upload to a cloud.
- We have already been asked to provide versions of SAITO for Spanish, Chinese, French, Russian, German, Turkish and Italian. We would likely need to use a cloud to distribute SAITO and HERON updates.

Technical Challenges (continued)

/1/ It is likely many more genes of interest will be discovered and that syndromes will be drastically reorganized. /2/ It is slowly becoming possible to describe different versions of a gene: FOXP2 on chromosome 7 has been studied for 30 years but recently the mutations R553H and R328X were shown to have very different effects. /3/ FOXP2 interacts with over 180 other genes. Comparing humans will require cloud processing. /4/ Similar notations for epigenetic influences such as DNA methylation and histone mods are years away.

Technical Challenges (continued)

/5/ It is a matter of indifference to us where we build the first wave of schools but starting with just one 2,500 square foot school and polishing its daily routines seems wise. /6/ Based on decades of experience in epidemiology we have detailed some build-out plans in the **International** subsection of the **Investors** section of the website. European treatment of people with disabilities is archaic, and there is a fair amount of hostility to American companies. Western Africa in particular has financial challenges as well as very complex medical environments due to AIDS, Lassa fever, Ebola and malaria among other diseases.

Questions

We maintain an English language blog at

<https://silverwolfwushu.wordpress.com/>

It can charitably be described as wide-ranging.

Our website, www.silverwolfwushu.com, has grown past sprawling and can be daunting to navigate. The bulk of the more than 2000 web pages are in English and there is a special section for investors. For any questions please contact us at info@silverwolfwushu.com