Newline Technical Innovations
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Recent Projects

Feed My Sheep Foundation - DDV   *2016-2017*

Originally created by Tomasz Neugebauer, DNA Data Visualization Software (DDV) is an application that creates interactive visualizations of FASTA formatted DNA data. Newline was tasked with taking the original **C#** code base and modifying it to handle much larger data sets and create new annotated side-by-side visualizations. To handle the increased memory requirements, we migrated the project to **Python**, incorporating **PIL** and **DeepZoom** on the backend, and **OpenSeadragon** for interactive zooming on the frontend. The finished product can now create visualizations of the whole human genome handling image files 1.2GB and greater.

See it at: https://DNASkittle.com/ddvresults/dnadata/example/

Signspan - Signspan Backend   *2016--*

Signspan is a platform that allows advertisers to display and manage their ads on a digital signage network located in downtown San Diego. The platform uses a combination of **Java** and **Python** frameworks to serve a **Restful API** to a **Javascript Single Page Application** front-end. The application utilizes **RabbitMQ** to handle large amounts of incoming requests without any performance or data loss.

USDA - Animal Disease Spread Model   *2013-2016*

ADSM is a USDA project designed to simulate disease outbreaks among livestock in order to plan responses. The application uses **Django** to track hundreds of sophisticated parameters and exports large amounts of result data visualized through **Matplotlib**. We built a slick interface using **JQuery and CSS** that guides users through the complex configuration stage. Then after the simulation is run, the users can analyze the data through a set of interactive data graphs and visualizations.

ADSM is architected to be deployed as a **multi-platform desktop application** or on the **Google Cloud Computing** platform. Now that researchers are able to create their own simulations and view the data, they no longer have to rely on a team of software engineers to run every simulation.

See it at: https://github.com/NAVADMC/ADSM/releases/latest

Newline Technical Innovations - DNA Skittle   *2012-2013*

The brain child of Josiah, DNASkittle is a **Genome Browser** which utilizes **HTML5 Canvas** for powerful interactive data visualizations that allow humans and computers to do what they are best at. Each data visualization is a **Python** mathematical transform that creates an image from the raw sequence data designed to make some aspect of the sequence intuitive to human pattern recognition. DNASkittle's unique approach presents the raw data to the user without biasing assumptions about what the sequence contains.

The application was designed in a way to allow any user, no matter their computing resources, to have access to the large data sets of the genome. In the **cloud enabled application**, a user can **upload their sequence data** and let our servers crunch over the large amount of data freeing them from the burden of maintaining a lab supercomputer.

See it at: https://DNASkittle.com

CNE Creative Enterprises - WETS Cloud   *2014-2014*

WETS Cloud is a project that took a fleet of aging Watermill Kiosks and brought their maintenance tracking to the Cloud. Using a Lantronix Modem emulator, we took Watermills that previously used telephone modems and enabled them to call directly into a Serial Socket on our **Cloud Hosted Server**. The Server listens for incoming "calls" from Watermills in the field, logs the alert, and sends a notification to a technician.

Shrinking World Solutions - Pipe Scan   *2014-2015*

Pipe Renewal Services uses a magnetic field sensor on a hydraulic rig to determine if pipes are safe to use on oil rigs. The Pipe Scan software takes the raw sensor reads and does **real-time data analysis**. Users receive a stream of data visualization with flaws in the pipe highlighted so that they can be quickly removed. Pipe scan uses a **Node.js** client/server model supported by a **Python Matplotlib/Pandas** data pipeline for heavy number crunching on the go.

Newline Technical Innovations - Verdant Systems   *2013-2015*

Verdant Systems is a great full stack example of what Newline is best at; from basic **circuit design** to **prototype fabrication** and **embedded programming**, coupled with smart **web integrations**. This project is a web facing environmental monitoring and control unit specifically designed for commercial food production using **aquaponics**.

Taking in several streams of **sensor data**, our **custom hardware** can present an online control panel to a farmer to get real time statistics on their greenhouse environment. Through the presented graphs and customizable alerts, the farmer can make an educated decision on how best to tend their crops. Actions can then be taken through the control interface to perform various automated tasks in the environment.

Other Project Examples Available Upon Request

Newline Employees
Bryan Hurst
- Founder and Chief Executive Manager of Newline Technical Innovations
- Specializing in DevOps, Network and Server Design and Administration, and backend Software Architecture
- Adept at using knowledge from multiple fields to come up with innovative and cross-disciplinary solutions to problems that more specialized engineers may not come up with: saving clients time, money, and trouble.
- Designed and created an automated aquaponics sensor and control unit. From prototype circuit design and board assembly to microprocessor programming and embedded linux control unit programming, Bryan designed and implemented the whole project from idea to physical prototype with working Cloud Integration.
- Expertise in Python, Django, Cloud Computing, C#, Java, C++, ATMEL Microprocessors
- Has coursework towards B.I. in Computer Science and 5 years professional experience with cutting edge technologies

Josiah Seaman
- Founder and Manager of Newline Technical Innovations
- Specializing in data visualizations and complex logic systems
- Designed scientific computing and data visualization application for the USDA. The Front End User Interface allows the user to enter >300 parameters that creates a simulation of disease spread in animals. Created database structure that defines the relationships between all the computational models
- Invented a 2-dimensional genome sequence visualization application - developed both a desktop and browser based version. See it at DNASkittle.com
- Expertise in Python, Django, Javascript, CSS, Matplotlib, C++, C#, Notebook and QT
- B.S. in Computer Science. Graduate work in Computational Biology

Geoffrey Thompson
- Software Tester and Coder for multiple companies
- Specializing in Frontend and Backend Web Application Architecture and Unit/End to End User Testing
- Created test bed for the USDA's ADSM project utilizing unit tests to test Python functions and interaction with the SQLite database, and Selenium tests to run end-to-end user scenarios in the Chrome browser
- Expertise in Python, Test Frameworks, Django, Ruby, Rails, Javascript, C++, C, ATMEL Microprocessors, Embedded C

Paul Heinecke
- Experienced Project Manager, with emphasis in creative project solutions
- Has worked on projects from art to technology
- Proficient in allocating strengths and mitigating risks to optimize solutions for clients
- Familiar with processes for both Waterfall and Agile Project methodologies
- Bachelor's degree in Music Business from the University of Northern Colorado

TJ Mahlin
- Multi-disciplinary designer with a focus on User Experience Design
- Experienced in design and execution of Design Research engagements in a wide range of industries and applications
- Experienced in synthesizing Design Research data and producing effective, intuitive interaction designs from gathered insights
- Adept in full range of UI design and development activities from ideation to implementation
- Experienced Brand Manager

Shrinking World Solutions Employees

Newline has a close relationship with another local company: Shrinking World Solutions. Both companies partner closely on joint projects.

Mark Seaman
- Founder and CEO of Shrinking World Solutions
- 25 years with Hewlett-Packard in R & D as a Software Engineer, Technical Lead, and Software Architect. Products ranged from disc drives to scanners, OCR software, printers, and digital cameras
- Author of 12 U.S. Patents with 44 invention disclosures and 22 patent applications
- Passionate proponent of best practices in Agile Development and automated testing
- B.S in Electrical Engineering

Eric Williams
- Co-Owner of Shrinking World Solutions
- 24 years with Hewlett-Packard in R & D as a Software Engineer. Products ranged from storage systems to scanners, printers, digital cameras, and web-based photo solutions. Final role was Technical Lead for Snapfish Photo products
- Author of 2 U.S. Patents
- Experience with development of consumer-facing web applications, Windows software, and embedded firmware
- B.S in Computer Engineering

Stacie Seaman
- 13 years with Banner Health as a Staff Nurse, IT Clinical Analyst, and culminating with 8 years as IT Operations Director within the IT Clinical Applications division
- Led a team supporting enterprise clinical software in 24 hospitals located across seven states within Banner Health
- Effective communicator, adept at building and guiding teams
- Proficiently utilizes project management tools to manage multiple, complex projects simultaneously within budget constraints and to resolve post-implementation issues
- B.S. in Psychology. B.S. in Nursing, Registered Nurse

Christine Seaman
- Software/QA Tester for several companies.
- Customer Care Representative for inbound call centers for prescription drugs and customer accounts.
- Built the Shrinking World Solutions web site.
- Studied Accounting at University of Northern Colorado. Completed certificates in Health Information Specialist and Medical Billing. Licensed Health Insurance agent.

References

Mike Levy, Levy Consulting - mike_levy@levy-consulting.com

"I've been involved in the software development industry for 35+ years, including project management of some very large software products with some Fortune 100 companies, and Newline Technical Innovations is among one of the best software companies I've ever come in contact with.

"Not only do they truly understand software technology and software development, they also understand the business and management aspects of running a successful software development company. They clearly understand the importance of dealing with customers and are very adept at dealing with difficult and demanding customers.

"I recommend Newline Technical Innovations without any reservations."

Eric Fitzsimons, CNE Creative Enterprises - eric@cnecreative.com

"Newline Technical Innovations is a highly effective team of application developers. They have a broad skill base between the various members and complement each other well in being able to bring complete solutions to market in an efficient manner. I have been managing software development teams for 18 years. [Newline is] more effective than any other team I have worked with for approaching a software project, breaking it down and just getting it done. They have worked on micro-processor level firmware projects in C, embedded Linux applications in Python and server applications in Python with Django for me.

"...Bryan is a rock solid applications programmer and overall systems designer. Josiah brings a scientific background and strong data analysis skills. They have various other programmers now working with them that allow them to leverage their skills and get applications done fast and efficiently."