Developing collaborative software for better decisions.
Company Overview

Founded in 2009, SimInsights is located in Lake Forest, California. SimInsights leverages unique skills in software, math, simulation, visualization and design to develop innovative solutions that boost productivity, improve decision making and build insights. SimInsights customers, funders and partners include UCLA, Ferrazzi-Greenlight, Texas A&M University, CK12, Defense Advanced Research Projects Agency (DARPA) and Qatar Foundation.

The SimInsights core team consists of engineers with degrees in computer, chemical and mechanical engineering. Our advisory board consists of distinguished faculty from leading universities in the US, India and China as well as industry professionals from Microsoft, Xilinx and Ford.

Following is an overview of some of our projects.
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Revolutionizing American Manufacturing with Simulation and Optimization

Design of complex engineering products and systems such as wind-turbines has traditionally been very time consuming and expensive. Such projects often involve expensive and complex engineering simulation tools and require expert knowledge of engineering design, manufacturing and financial techniques. Furthermore, substantial amount of time is spent on coordinating these diverse functions, collaborating, communicating and integrating different work products. BladeMDA is a product design to address these inefficiencies.

Working with multiple university and industry partners and collaborators, SimInsights developed a web-based collaborative simulation based design environment for wind turbine design. This app encompasses the complete process starting from deciding the location of the turbine and power generation capacity to full engineering validation using finite element, aerodynamics and manufacturing simulation tools, to manufacturing process simulation as well as financial modeling, all in a seamlessly integrated environment.

**Highlights**
- Complete design of composite wind turbine blade
- Multi-disciplinary design for satisfying structure, manufacturing and financial requirements
- Funded by DMDII
- Partnerships with MetaMorph Inc., University of Delaware, Vanderbilt University, PTC, Inc., MSC Software Corporation, Pennsylvania State University and Applied Research Laboratory

**Benefits**
- Multidisciplinary design of composite structures like wind turbine blades
- Combine structural, manufacturing and financial objectives and constraints
- Seamlessly integrate industry leading simulation tools for finite element analytics, infusion and aerodynamics
- Intuitive user interface hides complexity of simulation tools
- Detailed financial model including capital and labor costs
- Open architecture and extensible design

**Features**
- Service oriented architecture
- AngularJS based responsive front end
- Amazon Web Services based cloud back end
- Real time notifications
- Rich data visualizations for decision support
When students engage with simulations and games, rich data sets are generated from those interactions. If analyzed and presented in actionable displays, the data can yield insights and drive decisions and actions that accelerate students’ learning and progress. This is exactly what SimInsights achieved by developing a learning analytics portal for a medical simulation based training company. Teachers can log in and visualize students’ learning and progress and thus make better instructional decisions. The portal is designed for use on multiple devices of varying screen sizes so teachers can stay informed wherever they are. We continue to maintain and mature this product in partnership with our customer.

**Benefits**
- Real time actionable insights for decision making
- Responsive interface across different screen sizes
- Full administrative support such as account creation and data management
- Role based user experience

**Features**
- Service oriented architecture
- Custom visualizations that fit the unique needs for each user role
- Image capture from simulations
- Data management
- Amazon Web Services (AWS) based cloud backend
Enabling Personalized Learning with Automated Generation of Game Based Assessments

Automatically generate targeted games for your classroom. While traditional adaptive learning approaches boil down to a branching engine that operates on a limited pool of content, our generative approach creates personalized content as well as learning paths for each individual learner. It is a wizard-like interface that teachers can use to automatically generate a collection of targeted game based assessments and share with students. Teachers can specify features such as complexity, difficulty, duration, grade levels, etc. that target specific learning and assessment needs.

**Benefits**
- The easiest way to create and share simulations ever. You can build your first simulation in less than a minute.
- Teachers can define the assessments at a high level.
- Students exercise their knowledge of physics.
- Enjoyed by students as it is highly interactive.
- Be part of a global community engaged in learning by doing.

**Features**
- Generate by selecting tags: Problem Type, Problem Solving, Bloom's, and more.
- Option to generate a certain number of problems.
- Simulations with different assets: Vector the Train, Madison, Panda, and more.
- Icons with captions.
- Option for feedback to students.
- Visualize students performance and progress through an interactive dashboard.
How Can Collaboration Boost Sales Force Productivity?

Ferrazzi-Greenlight, a leading global sales strategy consulting firm, needed a relationship mapping tool to help develop and execute sales strategies for Fortune 500 clients. SimInsights team built a real time collaborative application (similar to Google Docs) that allowed geographically dispersed sales people to securely work together. SimInsights continues to maintain the application and serve as thought partner in exploring future possibilities. In today's highly connected world, collaboration is the key to greater productivity. How can collaboration boost your team's productivity?

**Highlights**
- Real time collaboration
- Visualizing relations
- Actionable insights
- Workflow and integration
- HTML5 app

**Key Features and Benefits**

**Multiple Data Views**
Allow users to view different sets of data at a time, including graphical and spreadsheet views.

**Drag and Drop**
Simple interactions that allow users to view, edit, and organize charts and relationship maps.

**Multiple User Views**
More than one user can view as well as edit data in real time via web browsers.

**No Plugin**
Built using HTML5 to support a variety of devices without any plugin downloads required.

**Exporting Data**
Users can easily export data from this application and view it in other applications.
How to Get Smarter About Managing Risk

Millions of Americans are being offered insurance plans for small ticket items, such as consumer electronics and home appliances. Should the consumer accept these contracts? At the same time, millions of Californians living in earthquake hazard areas, do not buy adequate insurance. As a finalist in the prestigious FinCapDev competition, SimInsights developed a mobile application that uses economic utility models to help consumers make smart personalized insurance decisions and avoid being under- or over-insured. SimInsights partnered with Dr. Manel Baucells of Rand Corporation to tackle this challenge of offering consumers an answer in their decision-making process. In the final round, Smart Insurance won the honorable mention award which was covered in Forbes.

Key Features and Benefits

Manage Insurance Plans
No more looking around for paperwork. Insurance information is securely stored and easily accessible any where, any time.

Get Sound Advice
Users answer questions to help them assess their habits and receive advice on whether or not to buy insurance products.

Receive Personalized Offers
If users choose to buy insurance, they can connect with local brokers who can help them find the best plans.
How to Use Playlists to Build Long Form Interactive Experiences?

Games, simulations, stories, quizzes, and more can be combined into a Playlist. Much better than a scrap book, Playlists is digital that can easily be shared with everyone and provides data feedback via the dashboard.

Benefits
- Simple to use for both the creator and the viewer.
- Multiple game based assessments that can be shared via URL.
- Get data via the dashboard.

Features
- Put together games, simulations, slides, quizzes, and videos.
- Automatically jumps to next item on the playlist after completing one.
- Allows jumping from one item to another.
- Supported on browsers on both laptops and tablets. No install needed.
How to Create Quizzes that Assess and Teach Effectively?

With Quiz Creator, teachers can create their own quizzes. Quiz Creator allows for videos, images, text and even games and simulations to be embedded for maximum interactivity and engagement.

**Benefits**
- Add your own question, answers and feedback.
- Share via a URL.
- Get data via the dashboard.
- Use on any device.
- Rich analytics.

**Features**
- Include multimedia in questions, such an image or a video.
- Option for student feedback for each answer.
- Adaptive quizzes with customizable policies.

With Quiz Creator, teachers can create their own quizzes. Quiz Creator allows for videos, images, text and even games and simulations to be embedded for maximum interactivity and engagement.
How to Enable Customers with 3D Printing?

Advances in 3D printing promise unprecedented personalization in manufacturing and design. To capitalize on this opportunity, entrepreneurs will need a robust and reliable software platform that enables them to obtain customer's body scans or other data into optimized product designs swiftly and effectively. Tools from graphics, computer aided engineering (CAE), computer aided design (CAD), machine learning and e-commerce need to be combined to launch websites that successfully sell such personalized 3D printed products ranging from shoes and earbuds to bicycles and machine parts. SimInsights has expertise in developing such software systems. Contact us to learn about how we rapidly build cost-effective and high performance web and mobile applications in this sector.

Benefits
• Allows ideas to develop faster than ever
• Allows the creation of parts at rates much lower than traditional machining
• Getting to hold the tangible product-to-be, in hand, clears all lines of communication
• One can personalize, customize and tweak a part to uniquely fit their needs

Features
• Wide variety of material types for varying requirements
• Wide variety of devices ranging from low to high price
• Many biocompatible materials becoming available
How to Create Lesson Plans That Report Analytics?

Slides is a story telling tool allowing for text, images, voice recording, and videos. Not only can it be used for custom stories, but also as part of a playlist to customize teachers instructional materials and/or tutorials.

Benefits
- Covers all major media types: text, images, voice recording, and videos.
- Easy for teachers to create their custom stories tailored to their students.
- No more wasting paper.
- Easy share via URL.
- Get data feedback on students interaction.

Features
- Record your own voice.
- Simple page turner.
- Jump to any page, anytime.
Can We Run Randomized Controlled Trials with Interactive Content?

Cognitive science is undergoing a revolution as crowdsourcing enables rapid data collection and hypothesis testing. Survey software such as Qualtrics can handle forms, but not rich interactive content such as games and simulations. Such content generates rich interaction data which is vital for cutting edge research. SimInsights has developed a research testbed that offers a complete end-to-end workflow starting with creating new custom-game/simulation variants, attaching pre-post assessments and instructional content to assemble a playlist of activities, deploying to external sites such as Amazon Mechanical Turk and BrainPop.com, gathering, processing, visualizing and downloading the data for analysis. These tools have enabled customers crowdsourced data from over 250,000 students (20 million in-game actions). With recent SBIR support, we have also built generative tools that automated the exploration of the content design space by creating many more new levels than would be possible by hand.

Researchers can build multiple playlists of activities. Each playlist can combine arbitrary sequences of games, simulations, quizzes and instructional multimedia content. Multiple playlists can be collected into an experiment which randomizes visitors across the playlists for A/B/n testing. The experiment can be shared via a URL with the target audience or crowd workers (e.g. Amazon Mechanical Turk). When the user opens the URL, a random playlist from the experiment is selected and assigned which helps implement randomized controlled trials (RCT) at the individual or group level.

Benefits
• Conduct research with rich interactive game and simulation content.
• Easy sharing via a URL.
• Collect rich data and export to desired format.
• Visualize using interactive dashboard.
• It’s the simplest way to do rapid A/B/n testing for content optimization and research.

Features
• Add any number of playlists into an experiment.
• Equally distributes playlists to students or crowd workers.
• Can be distributed into Amazon Mechanical Turk.

Randomized Control Trial

CONTROL

RANDOMIZE

TREATMENT
What is it Like to Experience a Wind Farm in VR?

We are developing a complete VR and AR based system for wind farm design, planning, workforce development and maintenance. The first phase of this project focused on engineering design and simulation of the blades using composite materials. In the next phase, our focus is on maintenance and workforce development (training). VR (HTC Vive, Oculus Rift etc.) and AR (Microsoft Hololens) offer tremendous opportunities for developing engaging training programs that also yield significantly better learning outcomes compared to traditional training. We are currently developing tools and content for these markets. Contact us to learn more about how these technologies can be used to enhance training and in-field service programs at your organization.

Benefits
- VR offers super deep immersion into content and experiences
- Deep immersion makes content more engaging and memorable and can affect user learning and behavior
- VR based research has shown transfer from simulation to real world contexts
- VR's ability to alter behavior has applications across every industry

Features
- Deep immersion into 3D content
- Variety of devices ranging from low to high price
- Oculus and HTC offer super immersive experience at affordable prices
- Some VR devices also offer gaze tracking
- Compatible with broad range of 3D content
Can Soldiers Improve Situational Awareness Using Gaze Based Training?

Gaze tracking is a powerful capability that is appearing in an increasing number of devices, most recently in Microsoft Hololens. In 2013, the SimInsights team worked with SRI (Princeton, NJ) in response to interest from DARPA (Defense Advanced Research Projects Agency) for training players to use gaze control to improve situational awareness. A key measures of interest was decreased reaction time (how to take in more information in less time). Examples of such processing may include detection of intentions of agents, recognizing objects, emotions, actions etc. Increased visual-spatial workspace was another area of interest. How can players enhance their ability to selectively pay attention to both foveal and peripheral fields of view and potentially even enlarge the functional field of view. How to use gaze control to monitor other's gaze, posture, gestures and behaviors and thus monitor their attention, engagement and interest, anticipate future unfolding of interactions based on holistic understanding of interaction in space and time etc. Finally, use gaze control to engage in cooperative interaction so as to influence other's attention, engagement and interest.

Benefits
• Gaze as input is remarkably unobtrusive and efficient compared to other forms of input
• Gaze can reveal rich behavioural and intent information about users
• Gaze tracking can yield insights into users’ affective and cognitive states
• Gaze based games can be far more interactive than other games
• Gaze input can be supplemented with other inputs to make content multimodal
How to Build and Use Dashboards for Personalized, Actionable Analytics?

We have developed customized dashboards for multiple use cases to enable users to make sense of information and plan their actions. For example, in academic settings, teachers and parents can use the dashboard to track student's performance and progress in real time. The dashboards can obtain data from experiments, playlists, storybooks, games, simulations, quizzes and many other sources.

Key Features and Benefits
- Automatically visualize data in real time.
- Fast and simple to understand data.
- Compare student's performance.
- Overview visuals including colorful bar graphs.
- View each student's performance.
- Allows jumping from one item to another.
- Option to export data.
SimInsights launched the KinderTouch parent engagement platform in 2013 which has nearly 800 schools signed up. Our market research has shown that over 95% of parents of preschool-age kids who own a smartphone would love to use an app to stay connected with the preschools. We developed KinderTouch to help preschools and parents communicate effectively, and to ensure that kids have the best possible learning experience. Whether it is a reminder to bring toys for “share-day” or scheduling a trip to “pumpkin-patch”, KinderTouch makes it easy for busy parents to stay on track. At the same time, KinderTouch allows preschools to boost their enrollment by differentiating themselves from competitors as well as deepen their relationships with parents through constant contact. Recently, more and more schools have been considering purchasing tablet computers and they often ask us for guidance on which apps to buy. Future versions of KinderTouch will include a personalized content recommendation system based on advanced artificial intelligence and machine learning algorithms.

**Key Features and Benefits**

**Instant Alert Update**
Allows parents to get instant notification of what is happening at the preschool.

**Upcoming Events**
Parents can stay in touch with what is happening at school, schedule appointments, etc.

**Contacting Preschool**
Parents can send instant messages to the school and keep the school updated on the child’s progress.

**Use KinderTouch for:**
- News & newsletters
- Events
- Alerts & reminders
- Albums
- File attachments
- Payments
- School directory
- Push notifications & SMS
- Email notifications
- Access on both mobile devices and web
- Attendance tracking and reporting
- Distinct permissions for school admin and teachers
- Time tracking for teachers for payroll
SimInsights joined the researchers at the National Center for Research on Evaluations, Standards & Student Testing (CRESST) at UCLA to investigate game based learning approaches to teach elementary school children about things like the physics behind friction and ways to cope with bullies. This DARPA funded project required that kids as young as kindergartners engage in deep learning while playing games. The SimInsights team of creative writers, graphic designers, developers and domain experts worked with the UCLA researchers to develop a set of games which were used to collect data from schools in Los Angeles area. The games were instrumented to track a variety of student interaction data. The results clearly show that tremendous potential exists in this area. Go Vector Go Game has been played by nearly 150 thousand kids who have collectively logged 15M actions (events).

**Key Features and Benefits**

- Game design that finely integrates fun, learning and assessments
- Physics animation
- HTML 5 based app that runs on PC and iPad
- Data collection for learning research and analytics
What if All Students Had Easy Access To Simulation Tools Just Like Scientists and Engineers?

After a decade of building a platform for professional engineers at companies like Boeing, Porsche and Toyota, SimInsights engineers set their mind to building a similar platform for students, so that they can engage in authentic learning. After four years of development and pilot tests by over 30 teachers and 1000 students in US, China, India and Middle East, the SimInsights platform is now available and has been used by people from over 2300 cities from 113 countries. The platform provides domain-specific sandbox applications such as SimMotion for motion simulations, SimOhm for circuit simulations, etc. to support open ended exploration of a wide range of physics and engineering concepts. Also included are functionalities for creating and sharing assessments, fine-grained analytics, embedding the simulations into e-books and other apps, etc. Do you have a simulation challenge that SimInsights platform can help solve?

Institutions that have used our platform:

"The experience was deep, rich and open-ended, resulting in a greater variety of responses from students relative to a traditional activity."

Michael Town, Physics teacher
University Prep School, Seattle, USA

Learn more: siminsights.com
How Can Understanding the Motion of a Thread Help Train the Next Generation of Surgeons?

Today, medical students are training to become surgeons by practicing suturing on cadavers and oranges. These approaches are risky and expensive. Engineering Professor Annie Ruimi and her colleagues at Texas A&M University contracted with SimInsights to develop a mathematical model of surgical suturing threads to assist in the development of a surgical suturing training simulator that will enhance medical training and reduce costs. SimInsights developed a web-application that allowed researchers to collaborate via the browser. This work helped the research team win a substantial grant from Qatar Foundation to conduct further research and to continue working toward a commercially viable product. SimInsights is supporting this project in collaboration with researchers at University of Rome in Italy, Texas A&M University campuses in Doha, Qatar and College Station, Texas, and Cornell Weill Medical School. We are building a 3D environment for a simulation and game based learning, using Unity3D.

Benefits
• A safe alternative to traditional surgical training
• More tightly integrated didactic content and assessment
• More engaging learning experience
• Possible to compare training experience with expert performance

Features
• High fidelity physics model of thin thread
• Unity3D based game like environment
• Potential to integrate with haptic devices such as gloves
Training the Next Generation of Scientists

SimPhysics is a collection of 50 interactive simulations with nearly 400 levels to help students and teachers deeply engage with the physics behind rollercoasters, cannons, cars, cameras, lenses, mirrors, charges, magnets, electricity, free body diagrams, waves, tires, helicopter blades, swings, gravitation, friction, towing etc. Motivation for creating SimPhysics came from research findings that showed interactive simulations to be vastly more effective than lectures and textbooks when it comes to learning physics. SimPhysics goes beyond simulation and also tracks students’ interactions and reports them so that teachers can see in real time how the students in their class are progressing. SimPhysics has over 125K downloads and continues to reach students around the world.

Benefits
- End to end service spanning design, development and delivery
- Deep simulation experience across various problem domains and industries including manufacturing, health and education
- Track record of customer success since 2009

Features
- Service oriented architecture
- State of the art tools for every platform and project
- Leverage proprietary SimInsights platform for development & hosting
- Agile development across range of tools, software & hardware platforms
How to Control the Next Pandemic?

Diseases like Ebola, Zika, Sars and H1N1 or even Flu can spread rapidly and cause worldwide disruption. With Tufts University Biomedical School, we are building a testbed for designing and evaluating an array of games that teach high school students about a variety of infectious diseases. Underlying the games is a flexible, general purpose infectious disease simulation based on graphical models. Our testbed allows researchers and teachers to easily author a vast variety of games with many levels with differing challenge levels and concepts involved. Without any programming, researchers can augment these games with pre-post quizzes or instructional content and deploy them to classrooms or crowdsourcing websites to gather data. Finally, our analytics tools and dashboard enable easy processing, analysis and visualization, yielding actionable insights.

Benefits
• Engaging, multiplayer game for infectious disease education
• Enable teachers to author custom games
• Realistic simulation provides high fidelity to actual disease dynamics
• Learning analytics and dashboards

Features
• AngularJS based game front end
• Firebase based multiplayer architecture
• Service oriented architecture
• Leverage proprietary SimInsights platform for development & hosting
• Agile game development
Technologies

Our projects involve a broad range of software tools including Java/HTML5, mySQL, .NET, Objective C, C++, JavaScript, Angular JS, Phython, Django Framework, Machine Learning, Artificial Intelligence, Optimization, Unity3D, jQuery, Java Spring Framework, Hibernate. We like to write software that runs on all devices and takes advantage of all available hardware and software technologies including API’s for everything from secure payments and financial data to geo-location and social networking. Following is a list of technologies we have used in various projects:

1. Cross Platform Web and Mobile Application Development (HTML5, iOS, Android, Win and BlackBerry)
2. Expertise in Web development using RIA/HTML5, Java/mySQL and .NET technologies
3. Design and development for different form factors (iPad vs iPhone, iOS vs Android)
4. Enterprise grade app development
5. Bank level security
6. Interoperability (message communication across devices and platform)
7. Specific examples of mobile capabilities
   - Sensors: Camera, GPS, Voice
   - Local DB Support
   - Caching
   - Data synchronization across devices and web
   - Security
   - Make phone calls, send emails, text messaging (sms, viber, etc.)
   - Video player available within app or launch YouTube from app
   - Calender
   - Appointment scheduling
   - Newsfeed—allows admin can push a newsfeed at any time
   - Secure payments
   - Send and receive fax
   - Generate PDF reports
   - Generate and scan bar codes and QR codes

Contact Us

From productivity apps to engineering and business simulations, from market opportunity assessment and customer driven innovation to math-based decision support tools, SimInsights is helping realize ideas and enable customers to create, capture and deliver new value to markets. Call or email us today and let’s start the conversation.

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