

Neha Pearce

Writing Portfolio

Table of Contents

Technical Article.....	2
Arts and Entertainment Feature.....	4
Science and Tech News.....	7
Character Portrait.....	9

This article was ghost written for Daniel Faggella, CEO of Tech Emergence, an AI and machine learning market research company. It was written based on a podcast interview between he and Charles Martin that is currently published [here](#).

Mapping the Modern Industry: The Trajectory of Machine Learning

Mapping out the technology industry of today requires understanding the trajectory of machine learning. It seems as if suddenly, machine learning is a hot topic, garnering billions of dollars in investments from tech giants Google, Facebook, and Cisco with its recent 1.4 billion dollar investment into the Internet of Things. However, machine learning consultant Charles Martin suggests the fascination with machine learning isn't as abrupt as it appears.

About ten years ago, Martin invented a machine learning SEO (search engine optimization) algorithm for eHow that achieved the first one billion dollar IPO since Google. Demand Media, which launched eHow, held a patent allowing them to predict what people wanted to search for on Google by analyzing the data of the questions that were asked.

“There’s usually one dominant one [answer] that people are looking for, but they enter it into Google in different ways and so getting search relevance correct is really hard,” Martin explained. eHow also operated with a recommender system in place, a second piece of machine learning, which allowed it to determine the intent of a user’s search. “We were able to essentially reverse engineer search and figure out what exactly people were searching for. If you know what people are searching for, you can front-run it, create content for it, and run ads.”

These search engines and recommender systems have huge implications for businesses in every industry as they enable companies to quickly increase site traffic, increase revenue, and make accurate recommendations for customers. Tools such as the search engine function by including a feedback loop that enables it to continue learning past what it has been programmed. For example, if Google provides four answers to a question asked by a user, but the fourth site provided is never clicked on, the engine will adapt so that this site will no longer be provided as a potential option.

“When you’re using a mobile device or if you’re using it from your voice like voice search, or Siri, you really don’t have the ability to enter in complex queries. So you need

to be able to enter in some sort of information it needs to learn something about what you've done, it needs to learn about what other people who are similar to you have done, and it needs to learn when to provide information to you that's personalized and when to provide a variety of information so it can collect feedback for the users," Martin said. "So this is a very complicated problem-that's where machine learning is not statistics. You really have to deal with these feedback loops and these biases that come up."

Martin has worked with big media companies, shopping retailers, and dating sites that all want to cash in on the 30% revenue increase that a good recommender system can provide. But even without an increase in revenue, machine learning enabled search engines are becoming an expectation of the online user experience.

"I would even say that the consumer experience has become so good that businesses are now trying to replicate it, either internally or for their customers," Martin said. "People are seeing this occur in their every day activity, whether they're using Siri on their phone, whether they're using Facebook, and they're just recognizing; 'why can't we do this as a company.'"

Google's release of Tensor Flow, an open-source machine learning software library, makes machine learning a much more accessible reality. Other software developments in Python, R, and Spark allow machine learning consultants like Martin to approach a client, have them enter in their data, and be able to produce a prototype as soon as six weeks later, whereas ten years ago he would have to code everything completely from scratch. Even five years ago, Martin describes working at Aardvark, which created a natural learning processor that was then acquired by Google for fifty million dollars, and custom coding C++ on top of Ruby on Rails.

"Now we're seeing the development of open source machine learning tools, even simple tools but they're becoming more and more accessible into the enterprise so that you can build products," Martin explained. "I wouldn't say they work end to end; it's much more where software was in 1995."

Machine Learning has a long way to go before it is easily within reach. The software that machine learning is built upon is still fairly green, making integration into companies and creating scalable products difficult. Further, the technology has not yet developed user-friendly elements that support long-term changes, roll-backs, or updates.

“The problem is that machine learning is fundamentally different in how you build systems because you’re not building from architecture,” Martin explained. “For someone like me to come in and be able to do work, the difference between it taking me three years, six months, three weeks or even an hour to do something is really the infrastructure support I have on the tooling.”

Until machine learning software become standardized, machine learning will remain in the hands of large companies with highly specialized talent and boutique consultancy firms, which are high cost and low risk.

“The world is changing, the intelligence inside a company is becoming more and more important and you have to have leadership,” Martin stated. “You have to have people in the organization that really understand this technology.”

While machine learning products are becoming staples of a modern industry and what it is capable of, the lack of a standard software platform to build from and the complexity of current technology has prevented any big players rising from the tumult. High-touch consultants will corner the market as the developments over the next five years attempt to establish a secondary market of consultants that can work off of a stable software platform.

“We’re going to see big changes coming, new technologies and restructuring of industries. There’s going to be a lot of disruption,” Martin projected. “We don’t know what it’s going to be.”

This article was written for The Bottom Line newspaper at UCSB. It has received 388 views since being published [here](https://thebottomline.as.ucsb.edu/2015/01/photojournalist-paul-nicklen-captures-the-spirit-of-the-wild)(<https://thebottomline.as.ucsb.edu/2015/01/photojournalist-paul-nicklen-captures-the-spirit-of-the-wild>) on January 14, 2015.

Photojournalist Paul Nicklen Captures the Spirit of the Wild

“I’m so happy to see it packed; I was told it might not be packed because you’ve been braving some tropical winter storms,” joked National Geographic photojournalist and marine biologist Paul Nicklen with the audience in Campbell Hall on Sunday, Jan. 11. The event, titled “Spirit of the Wild” was the third part of four National Geographic Live series put on by Arts & Lectures, sponsored in part by Shiela and Michael Bonsignore.

Nicklen launched into anecdotes of encounters with incredible animals such as narwhals, beluga whales, polar bears, leopard seals, and emperor penguins while displaying breathtaking photographs that captivated the audience. “The ice and snow were my sandbox; the Inuit were my teachers,” he explained of his childhood in a small Inuit Community in British Columbia. “Negative 45 degrees Celsius with 60/70 mph winds. This is my comfort zone; this is where I’m happy.”

Nicklen impressed the audience with many awe-inspiring stories of his calm interactions with the wilderness and then delved into the one encounter he said he will never forget: spending time with a leopard seal. He acknowledged the bad reputation and terror of the animal that “eats Happy Feet” and has “black soulless eyes and a wry smile like it knows something.” It was his desire to give every animal a fair shake that placed him in Antarctica right next to a leopard seal feeding on Emperor Penguins. Before he got into freezing water so cold he had to keep checking that his numb fingers were pressing down on the shutter release, his captain gave him some wry words of advice: “if you get scared, you close your eyes and she’ll go away, eh.”

“I got into the water and she dropped her penguin and rushed over to me right away,” Nicklen told the audience, who were already riveted by the photo on display of a seal ripping apart a penguin. He described immediately finding himself looking straight down the seal’s throat and clicking away, keeping still, until she left to grab a penguin. “She lined it right up with me and let it go, then caught it again and repeated the process and I’m thinking she is trying to feed me this penguin. Now I’m not taking the penguin so she flips upside down and bobs slowly to me until the penguin is really close and lets it go.”

The seal attempted in a variety of ways to force the large useless predator she saw in her feeding ground to eat to no avail. “At one point I had five dead penguins floating around me but I just really did not want a dead penguin. She was giving me this dejected look, trying to get me to eat. Finally she gets so frustrated she flops one onto my head and I’m just giggling and clicking away absolutely overjoyed.”

Nicklen explained his deep love for creatures such as the leopard seal, emperor penguins and polar bears, and that ice is like soil in a garden; the vast ecosystem he photographs so brilliantly cannot survive without it. After obtaining a B.S. in marine biology he focused on the polar bears and wrote articles for National Geographic, but was frustrated when his data was shut down by politicians and he was unable to bridge the gap between the scientists and the public. Shifting to photography, he saw the power of creating an emotional connection between people and the polar landscapes and found that he was able to provide the visual proof of the melting ice caps many people demanded. The photographs have to be arresting enough to stop a reader long enough to look at the story.

“As a photographer, as a journalist, as a conservationist, I’m always trying to reach people,” Nicklen said. “If I’m out there shoulder to shoulder with a bunch of other photographers I know I’m not in the right place. When I’m out there all alone and I am responsible for my own life, I know I’m being effective and getting shots no one else has.”

Nicklen urged the audience to drop the attitudes, “Not In My Backyard” (NIMBY) and “Somebody Else is Likely Going To Fix This, Eh” (SELFIE). He explained that these acronyms, the latter invented by he and his partner, aren’t acceptable attitudes; everyone needs to engage in the issue of climate change and work together to create the change he works to inspire every day with his amazing photography.

“We have to get informed and involved, get rid of NIMBY and SELFIE. For ten years I used to spend all my time convincing people about climate change. Now everyone is starting to get it. We need to get it faster,” Nicklen said. “Because I don’t want to live in a world without polar bears.”

Follow him on social media or check out the amazing photography from the lecture at:
<http://www.paulnicklen.com>

This article was written for The Bottom Line newspaper at the University of California, Santa Barbara. It has received 2333 views since being published [here](https://thebottomline.as.ucsb.edu/2014/11/plous-award-of-2014-2015-goes-to-gis-assistant-professor-krzysztof-janowicz) (https://thebottomline.as.ucsb.edu/2014/11/plous-award-of-2014-2015-goes-to-gis-assistant-professor-krzysztof-janowicz) on November 12, 2014.

Plous Award of 2014-2015 goes to Assistant Professor Krzysztof Janowicz

Krzysztof Janowicz, Assistant Professor for Geographic Information Science (GIS), has been presented the University of California, Santa Barbara 2014-2015 Plous Award. This recognition is awarded to assistant professors who have conducted exceptional research, and contributed excellent teaching methods, creative accomplishments, and overall value to the intellectual community of the campus.

Janowicz came to UCSB to oversee the STKO lab at UCSB for the Department of Geography's GIS area and to fill the role of assistant professor, following his Ph.D at the University of Munster and a year of professorship at Pennsylvania State University. He teaches courses focusing on maps, spatial thinking, and software engineering geared towards geography. Among his other titles, he is the program chair for the Cognitive Science Program, co-editor and founder of the Semantic Web Journal, community leader of the 52° North Semantics Community, and a Faculty Research Affiliate of the Center for Information Technology and Society.

Janowicz has a vast range of published works: a multitude of short papers, web and journal articles, and three books. Additionally, he had a previous role as the head of a software engineering and consulting company in Germany.

“You know I’m the one who gets the award because some person needs to get the award, but the award is equally for my department who are super strong supporters and for my students,” said Janowicz of the Plous Award. “When I publish I very often publish with my students and I think it’s fair that they get their fair share of recognition.”

The Space and Time for Knowledge Organization, or Spatio-Temporal Knowledge Observatory (STKO) lab, headed by Janowicz is comprised of Ph.D students: Grant McKenzie, Yingjie Hu, Song Gao, Bo Yan, Marcela Suarez, Jiue-An Yang, Yiting Ju, Blake Regalia, Li Gong, and Su Yeon Han.

The team strives to create easy access, retrieval, and use of information via technology. The lab develops software, documents their work in the form of papers, and creates data for public use.

One of Janowicz's focuses involves using time to create predictive models of space, especially relevant in social media applications such as Yelp, Four Square, and Google Maps. It is then possible to examine the categories of locations that people frequent, not the specific locations.

GIS itself can use semantic web ontology technology to study retrieval and use of information. For example, it can determine the best placement for a fire station to maximize range of access; Janowicz is particularly intrigued by the variation in definitions of places throughout the world, which makes retrieval and coding of information more complex. The definition of a forest, for example, can vary throughout the world by different specifications such as tree height, tree population, and tree width.

"The frustrating fact that we are facing is that in each single country on this planet, what makes a forest a forest is differently defined," said Janowicz. "If one country would define what makes a forest a forest only in terms of the height of the tree, then someone who's interested in selling wood would go in there and cut out every other tree because that doesn't count as deforestation."

Janowicz laments the difficulty in searching for scientific information on the Internet and is working to ease this process. He wants to create an observatory to explore what he calls 'the second universe' or 'the universe of data,' and hopes to stay at UCSB to further his work. This is the study of web science, which is concerned with the exponentially growing amount of data in the world and the desire to connect and analyze it.

"For instance, it was very shocking for me during the IV shooting... that you had to go to social media to learn what was going on, and it took a while until the media caught up to that," said Janowicz. "But how great would it be if we could have all of it streaming into this great observatory, and we could immediately see people talking about [it, and] Instagram pictures. How good would it be if we could put that all together?"

This piece was written for an assignment during the Blue Horizons Environmental Film Program at the University of California, Santa Barbara.

Character Portrait

Dream Fisher. Joe Palladino is the Academic Advisor for the Film and Media Studies Department at UCSB, but when he sits down jovially to help the Blue Horizons class with the character portrait assignment, he explains his role as the one to determine dream jobs and teach each student, “you can do it.” He paints a picture of his office, a veritable trophy case of memorabilia. The walls are peppered with posters of student films that have passed through his office and on his desk: a Batmobile, rings from a movie-if anyone can guess which film a ring is from, he’ll give it to them-, and a signed Kevin Smith figurine. He mentions his fascination with the revealing nature of a person’s desk toys and his plan to make a short film about them. After talking to him for twenty minutes, I can see what he means.

Palladino’s array of comic and film bobbles is an eclectic collection much like the set of jobs and skills he has accumulated over time. He pulled from his environment much like a decorator crab, moving in the suspension of his life and reaching out to those things that most interested him or suited his purpose. He worked through college, attending the University of California Santa Barbara and pursuing his nostalgia of his first film lesson at Rusty’s Pizza Parlor, where he would marvel over the silent era titans Charlie Chaplin and Buster Keaton while he ate. During his university years, he switched between the UC and the community college, working and attending the CC to save up for the UC and staying there as long as he could afford it before returning to the CC. He

applied to jobs with full force, convincing employers that he had the capability to perform any task, whether or not he had ever given a single thought to the task before. Working in infomercials, he created advertisements for Cher Hair Care products before the company had created a product to sell to buyers. If there was a demand, the company created a supply. Palladino applied this mentality to his career path.

The idea for a documentary on office toys came to Palladino when he was visiting a financial consultant and inquired as to the nature of the peanut that sat on the consultant's desk. Palladino could easily have worn the hat of financial consultant himself as he moved into various job opportunities from managing bookstores, creating international letters of credit, working with leather from Korea, and writing for advertising companies. It may seem like a leap from these jobs to his current work with parodies featured on Funny or Die and short films, but like the Queen on the chessboard, Palladino has the inertia to move in any direction. As Joe Palladino tells us more about his life, I see how he sits as an example to his students for following their passions no matter what point they are starting from. His eyes sparkle behind his glasses as he describes helping people, whether it be his students in need of advice or people who approach him in comic book stores for help, mistaking him for a knowledgeable employee. His warm, permanent smile encourages me to follow the idea that may appeal me. I look forward to the day when I will have a desk worthy of Palladino's film.