

AE Studio



AE.STUDIO

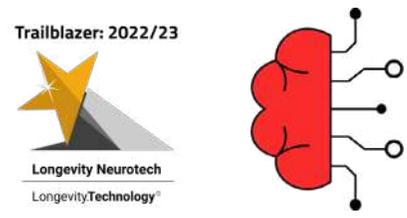
Company Profile

Agency Enterprise (AE) is a software development and data science consultancy. Founded in 2016, AE has bootstrapped its way to over 140 employees that aim to use technology to increase human agency. No venture capital. No private equity. No outside shareholders. This allows a longtermist perspective for clients and employees that leads to unparalleled thought-partnership and creativity. AE aspires to be visionaries and thought-leaders in human agency, BCI, Blockchain, and any other world-changing technology.

AE was born of the vision to increase human agency for end users through the technology the group develops for their partners and their wholly-owned and operated skunkworks companies. Running a highly collaborative agile process, these efforts are extended by investing heavily in the brain computer interface (BCI) space. BCI represents, to AE, the pinnacle of agency increasing tech with massive implications for users and the whole of humanity. To ensure that the incentives of this technology aligned with long-term gains in human agency rather than short-term monetary incentive, the founders were determined to bootstrap their way in lieu of outside capital.

“Building products with human agency in mind results in happier, more satisfied customers who use their newfound agency to build a longer relationship with the product, refer connections, and better their lives. What’s good for the user is good for profit and growth.” - Judd Rosenblatt, CEO of AE

A proportion of the profits from its data science consulting business are channelled into “skunkworks” efforts—internal, ambitious, agency-increasing projects that AE’s software team ideate and lead. AE incubates skunkwork ideas, turning its world-class team into founders themselves. Some projects remain



internal even after finding market fit. The team at AE scales them into full-fledged businesses, plowing profit into their BCI efforts, whilst others are sold, with the proceeds similarly finding a home in the BCI division.

In addition to multiple internal projects currently being incubated, one recent success has been the sale of ElectricSMS to Recharge, one of the industry's largest subscription payment processors. The software allows users to pause or alter subscriptions without cancellation and without the dark patterns of conventional alternatives. Short-term loss, long-term gain in customer lifetime value! AE is also enjoying impressive growth in its online fitness video platform, Instill, which managed \$200K in subscriptions from 13K users and over 2M+ minutes streamed in its first three weeks.

As a product and venture studio, skunkworks and other ventures enable AE to fund their ambitious BCI goals without the need for outside capital, ensuring incentives are aligned with long-term goals, maximizing the quality and quantity of positive outcomes.

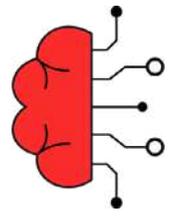
By taking on a longtermist perspective, AE can make decisions with the products it develops internally, unbound by considerations of quarterly earnings and the like.

The company's expertise in data science and software engineering best practices have allowed it to implement and improve upon the performance of state-of-the-art neuroscience and machine learning models. This expertise and experience led to AE's win in the Neural Latents Benchmark Challenge.

The ability to think like founders in helping clients craft their software visions ensures that AE does not only deliver to specifications but also exceeds expectations with extraordinary, agency-increasing products.

AE's innovative developer equity plan represents a unique approach to compensation that incentivizes its employees to collaborate and think about the long term with regards to adding value. It also greatly increases retention.

The company is also in the early stages of collaboration with multiple leading academic research labs and industry partners in the hardware space. Both will be necessary for developing its BCI software platform using data from human subjects.



Flagship Product Deep Dive

BCI applications can improve quality of life via neuroprosthetics, thought-to-text, and by replacing common devices like a keyboard and mouse with thought. Restoration of agency to those with severe disabilities will allow control of robotic limbs for motion and systems for communication. Ultimately, these disabilities will no longer preclude use of cell phones, computers, and other societal necessities.

AE is developing improved processes and standards for neural data, focusing on human agency and neuroethics with each piece of technology it develops. We offer grants to student groups to increase community engagement. We are open-sourcing tools for widespread and equitable access. We are baking user protections into the software based upon an evolving set of principles based broadly upon ethical priorities outlined in Nature. AE is developing new methods for interpreting neurodata, including algorithms that reduce calibration time, and generalise across time and even between users and environments.

While AE's BCI models are based upon well-researched academic ideas, they are actively and successfully improving the performance of these models through software engineering and data science best practices, ensuring robustness, transferability, reproducibility, and scalability. More broadly, by combining extraordinary creativity, communication, and product-focused design patterns, AE ensures that every delivered product delights and increases human agency.

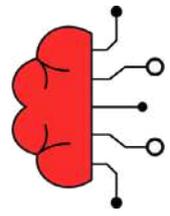
AE has recently begun partnership discussions with leading academic groups to help them develop robust, state-of-the-art, scalable software solutions for decoding neural data. Specifically, we are eager to partner with labs developing life-saving BCI systems to be tested with human participants. More specifically, microelectrode arrays and ECoG are of interest currently, in the hopes of building an intellectual scaffold from which to develop the next generation of BCI software.

AE is aware of the vast implications for this technology and its potential effects on human agency. This driving force has brought the company together around the goal of becoming a leader in the BCI space—to ensure there's an ethical voice at the table.

Evidence of safety and efficacy

AE will implement and deploy state of the art machine learning models. As an experienced provider of software engineering and data science solutions, it hopes to follow industry best practices for development, testing, and deployment at scale. Additionally, AE has experience handling sensitive data and delivering HIPAA-compliant solutions.

AE's models will be tested in the context of academic research labs with human subjects, and it expects some of the findings to be published in peer-reviewed journals.



Future development

AE has already demonstrated its competence in software development and machine learning by winning the Neural Latents Benchmark Competition. It has begun working on its real-time neural decoding software platform, which it intends to open-source for use in the research community. AE is also working with potential partners to test this solution in human participants.

Neurotech companies on the software side are dependent upon data produced by neurotech hardware companies and academic research labs. This is often a stumbling block for neurotech software development. By building relationships with potential partners performing research on human participants and delivering production-quality ML software solutions, AE will continue to develop its software via data from state-of-the-art neurotech hardware.

Once it has done so, the real-time neural decoder's application will be expanded to include work with several modalities of neural data to ensure the flexibility required for research labs to assemble the applications they desire.

Both industry and academic partnerships are currently being discussed to ensure the best research meets the best industrial software practices.

Target market

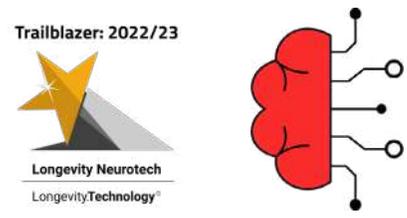
AE's solution targets anyone who can benefit from a brain-computer-interface. Currently, this market would consist predominantly of the severely impaired seeking restoration of motion (e.g. neuroprosthetics) or capacity to communicate (e.g. thought-to-text).

As the technology matures, so too will its user base and applications. Ultimately, AE believes the technology will expand beyond restoration to augmentation, allowing seamless communication between human beings and machines. While that technological advance remains distant, the market for such a tool will be anyone who uses a personal computer.

Channels to market

AE's current focus is to work in collaboration with neuroscience research labs performing brain-computer-interface research with human subjects (at no cost to the lab). Throughout the process, AE's values of increasing human agency and ensuring ethical use of neural data will allow the company to offer its decoding solutions to the maximum number of individuals that stand to benefit from current hardware and software.

AE's core values of maintaining a growth mindset, overcommunication, and taking increasingly-large A/B-tested baby steps ensures that we will continue improving their models and their understanding of human agency at every stage.



Additionally, AE is beginning partnerships with device manufacturers to incorporate its software solution into their systems - again, maximising the number of potential users who can benefit from the decoding AE can provide.

Success Factors

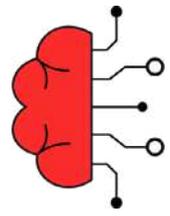
Team and Reputation

The AE team consists of a rich array of academics, ex-academics, ex-founders, and industry professionals (read more here). These are just a few of its data scientists focused on BCI:

- Dr. Darin Erat Sleiter holds a PhD in quantum physics from Stanford and has 15+ years of professional machine learning and software engineering experience across numerous fields of application.
- Dr. Sumner Norman holds a PhD in Mechanical Engineering from UC Irvine and has served as a postdoctoral researcher in Caltech's neural engineering laboratory for the past ~5 years.
- Dr. Mike Vaiana holds a PhD in Computational Data Science and Engineering from the University of Buffalo and has four years of experience developing and delivering large scale machine learning solutions.
- Dr. Robert Luke holds a PhD in Neuroscience from KU Leven, focusing on responses to cochlear implants and worked as a research fellow at Macquarie University for ~4 years before joining AE.
- Dr. Diogo Schwerz de Lucena holds a PhD in Mechanical and Aerospace Engineering from UC Irvine and worked as a postdoctoral fellow at Harvard thereafter, developing robotic systems for home rehabilitation after neurologic injury.

Intellectual Property

- Although only founded in 2016, AE is already demonstrating the skill of its machine learning researchers in modelling neural data by recently winning the Neural Latents Benchmark Challenge. Our IP strategy finds an analog with Red Hat (Linux) rather than traditional tech. We tend to open source a great deal of our tooling to develop in concert with the broader community. The principal goal lies in the development and deployment of public goods that increase human agency.
- We are taking the best of modern machine learning, bringing that knowledge to the field of BCI, and developing specific IP to ensure that software can run in real-time, with less training, and remain robust over time
- Specific IP consists of industrial best-practices for development of algorithms to process neural data, and the experience to scale and deploy efficiently.



Funding

- AE is a fully bootstrapped company. Foregoing any outside capital, it has been profitable since its founding in 2016 until today. This is because both its consulting and Skunkworks business are profitable and allow a long-term approach to BCI research and software development. Two years ago, AE's headcount was ~25. One year ago, headcount was ~60. Presently, AE's headcount stands at ~140. We recently sold ElectricSMS, which we founded and incubated, to ReCharge for \$6M and an undisclosed quantity of equity.
- We have offices in Venice, LA and in, Florianopolis Brazil, and have worked with clients on multiple continents, including recently a collaboration with the South China Morning Post (SCMP) to immortalise historical events via NFTs.
- AE is currently growing on a global scale, with clients across the biotech space. From deploying cutting-edge computer vision algorithms to diagnose health conditions from in-home urine tests, to machine learning models from wearable health data to improve wellness, to classifiers of ischemia from cardiac and cranial sensing, AE deploys its data science expertise to improve human agency and human health.