

KEITH E. BOURNE

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CHIEF TECHNOLOGY OFFICER PROFILE

Business Strategy · Project Management · In-Depth Technical Expertise

EXECUTIVE PROFILE

Seasoned education technology leader with a successful track record in delivering innovative technical solutions aligned with business strategies. Over two decades of technology development expertise, including 9-years of experience with Machine Learning (ML), across various industries and scales of business. Significant experience at the C-level and with technology development in the education technology space. Proficient in converting complex business needs into scalable tech solutions and directing teams to execute them in high-velocity environments. Significant contributions to the success of ML projects, exemplifying in-depth technical leadership.

AREAS OF EXPERTISE

- Education Technology Leadership & Strategy
 - Computer Vision (CV) / Vision Language (VL)
 - Natural Language Processing (NLP) / Large Language Models (LLMs)
 - TensorFlow / Keras / PyTorch
 - Big Data Management (Pandas, MapReduce, Hadoop, Spark)
 - Cloud Computing (GCP/AWS/Azure)
 - Database Technologies (SQL, NoSQL)
 - Agile Methodologies
 - HIPAA certified
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CAREER HIGHLIGHTS

ONLINE LEARNING CONSORTIUM (formerly SLOAN CONSORTIUM) - Boston, MA 2002 - 2008
An education technology non-profit focused on research, consulting, and publishing.

Chief Operations Officer | Chief Technology Officer

- Led business strategy, marketing, technology, and operations initiatives.
- Facilitated 10X membership growth in the education organizations (200 to 2000).
- Implemented and played lead development role in numerous technology initiatives that were integral to the growth of the company and the client-based, including:
 - Learning Management System (LMS), Content Management System (CMS), Customer Relationship Management System (CMS), integrated Elluminate and Second Life (the original “metaverse”) into learning platform.
- Engaged millions of customers through multi-channel digital marketing.
- Played key role securing \$12M in grant funding and revenues of \$8M over six years.
- *Please note: highlighting a key experience up front, but this is from 2002-2008*

GRADIENT VALLEY, INC - Ann Arbor, MI

2015 - *PRESENT*

Machine learning strategy and development consultancy utilizing cutting-edge technologies to deliver high value, high impact solutions.

Chief Executive Officer / Technical Project Manager / Lead Data Scientist

- **Education-Focused Generative AI Pipeline Application**
 - Developed one of the most extensive AI-based applications utilizing generative AI, custom NLP models, and a prompt engineering pipeline.
 - Developed education content generation pipeline for comprehensive lessons on any topic, reducing creation time from weeks to minutes.
 - Addressed common generative AI issues, like hallucinations and misinformation, by developing and deploying proprietary NLP models.
 - Designed a system for simulating mock interviews and providing detailed follow up feedback with speech-to-text and text-to-speech technologies.
 - Developed AI-powered Education tutor/chatbot that delivers content and guidance via mobile.
- **Stealth Mode Startup**
 - Led 4 person data science team.
 - Developed vision language and computer vision based object detection capabilities for live streaming video.
 - Detects and identifies individuals based on soft-biomarkers (such as height, hair color, clothing color).
- **High-End Security Application**
 - Led 4 person data science team.
 - Developed one-shot Siamese CNNs and facial recognition technology preventing hardware hacks for critical security environments.
- **KAMMCO**
 - Led 5-person data science team.
 - Migrated massive streaming data sets from on-premise to cloud.
 - Improved quality control with NLP applications.
 - Utilized Hadoop, Tez, and Spark.
- **University of Michigan (BiAffect & Priori)**
 - Led 4-person teams on two separate projects.
 - Focused on predictive analytics and natural language processing for identifying behaviors associated with triggers for bipolar episodes.
 - Project attracted national press coverage.
 - Lauded as a major innovation in the field, with medical applications reaching far beyond bi-polar treatment.
 - Involved handling of HIPAA eligible data.
- **NOAA / Ohio State University / LimnoTech**
 - Led 7-person team.
 - Forecasted potential toxicity of algal blooms in the Great Lakes using predictive forecasting techniques and computer vision.
- **University of Michigan Healthcare**
 - Built substance abuse aid with complex matrix of AI-based notification logic providing feedback to users to manage addiction based on daily surveys.
 - Involved handling of HIPAA eligible data.

APPERVASIVE, INC. - Ann Arbor, MI

2008 - 2014

Technology consulting firm specializing in business strategy and software app development.

Business Strategist / Project Manager / Senior Software Engineer

Led technology product development initiatives for clients, advising on the integration of technology with their overall goals. Examples of projects include:

- Weather Underground (Weather Channel subsidiary)
 - Led 9 person cross functional technology and design team
 - Developed 3 apps from concept to launch
 - Selected as PC Magazine Editor's Choice and featured in Google Play
- Arbor Scientific data analytics - 12 month effort resulted in:
 - Growth of the email list from 4,000 to over 60,000.
 - Revenue growth of 140%.
 - Quadrupling of profits.
- Xanedu
 - Education technology app featured in Apple's education initiatives.

EDUCATION

UNIVERSITY OF MICHIGAN, Ann Arbor, MI

Master of Applied Data Science

Recipient of Pioneer Scholarship

Graduated magna cum laude - 2022

BABSON COLLEGE, Wellesley, MA

Master of Business Administration - Technology Marketing, Entrepreneurship

Recipient of Frederic Hamilton Entrepreneurial Scholarship (candidate with significant entrepreneurial experience)

Graduated cum laude - 2003

UNIVERSITY OF NORTH CAROLINA, Charlotte, NC

Bachelor of Science in Business Administration, Finance/Commercial Banking

Graduated cum laude - 1999

PUBLICATIONS

[Effects of mood and aging on keystroke dynamics metadata and their diurnal patterns in a large open-science sample: A BiAffect iOS study](#) • June, 2020 • Journal of Informatics in Health and Biomedicine (JAMIA)

[Online Student Profiles: Stay-at-Home Mothers and Work-at-Home Mothers](#) • 2009 • E-Mentor by Warsaw School of Economics

COMMUNITY - Organize these local community technology groups:

Detroit Machine Learning Group (Co-founder), Ann Arbor Machine Learning Group (Co-organizer), Ann Arbor Google Developer Group (GDG) - Cloud/AI Specialist