Brian Hogan, M.S.
Instructor of Computer Science
School of Professional Studies
Clark University
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<in><github::teaching><github::portfolio>

EDUCATION

Syracuse University, Syracuse, NY — Sept 2018 - Dec 2020
M.S. Applied Data Science, 3.8/4.0

Boston College, Chestnut Hill, MA — Sept 2000 – May 2001
M.S. Sociology, Statistics. Matriculated; five courses before permanent work relocation

Harvard University, Cambridge, MA — Sept 1997 - June 1999
C.S.S. in Business Administration and Organizational Behavior

Babson College, Wellesley, MA — Sept 1989 – May 1993
B.S. Business Administration and Psychology from Wellesley College

INSTRUCTION

Teacher & Owner — **Mobile.1.Compute.Laboratory** — 07/2024 -

1. Engineered lab to address workforce upskilling in technology and logistics
   - └> Provide adaptive AI learning frameworks, reinforcing learners to own structured knowledge corpora for authentic skilling and sustainable employment
   - └> Develop AI upskilling methodology dynamically adjusts learning frameworks based on complexity and user response for advanced skilling like physics
   - └> Accessible for diverse technology student groups and long-haul truckers
2. Create scanning methodologies to establish new digital skilling paradigms
   - └> Apply research engineering: cognitive load, lexical density, sparsity
   - └> Leveraged RAG pipelines with Colab to structure ontologies, GPT, JSON
   - └> Fabricate for hands-on tech education with computer fixes and build resources
3. Developing skilling curriculum power, water, mechanics, road-haul
   - └> Equip learners with a methodology for creating practical how.TO guides
   - └> Provide truckers with repurposed E-trash setups with Google OS Flex ecosystem
4. Information exchange tooling optimizes lexical semantics with information gain
   - └> ∑ Lexical Gain: word count reduction 22.35%; semantic density preservation 99.8%

Instructor — **School of Science and Technology, Endicott,** in-person — Spring 2024

csc.160, Introduction to programming; Havill, Discover Computer Science
csc.160L, ibid. laboratory with C++, Python, AI\ML
- materials outdated, rebuilt all labs, docs, and Colab codebooks

csc.265, Discrete mathematics; boolean, combinatorics, laws, sets, RSA

Provided AI assistant based on ontology knowledge engineering and integrating ASCII, 3D structural phenomena with RAG & reinforcement learning to enhance AI-driven learning AI.agents & outcomes <pdf>
- Optimizes skill adaptation by dynamically adjusting difficulty
- Enhances student focus in and out of class
- Establishes learning accessibility and equity amongst students

Instructor — **School of Professional Studies, Clark University** — Fall 2023

MSCS-3050 Software Life Cycle
- Design concepts, paradigms, quality, testing, and configurations

MSCS-3070 Survey of Systems and Programming Language
- Bits, von Neumann, LC-3, Assembly, data structures, IO, C, and C++

Instructor — **Department of Computer Science,** undergraduate, in-person — Feb 2022
Southern New Hampshire University, Manchester, NH

IT-304 Systems Design and Analysis — Fall 2022, Fall 2023
- Instruct ontology information science with 10 knowledge designs
- Integrate Generative AI: Enhance student problem-solving autonomy with AI assistants for synthesizing requirements and complex data object models, resulting in a 40% increase in design projects.
- Pioneered design with GPT AI and ASCII visualizations transforming data objects into visual structures and code frameworks

IT-226 Communication in STEM Professions — Spring 2023
- Enhance precise skills for effective interpersonal relations
- Utilize an interactive corpora and NLP for information exchange
- Implement GPT AI to augment generation and information synthesis

Instructor — **Franklin Cummings Tech, Dept of Computer Science** — Summer I 2023
- **CT-144** Intermediate C++, Summer tutor contract for C++ instruction

Teacher — **ICARUS AI E-Learning**, 100 Wilshire Blvd, Santa Monica, CA — Fall 2022
- > 7.pillars.of.python, coding.cheats.Sheets, data.transformation

Tutor — Data Science and Programming, https://tutormatchingservice.com — 2019 – 2020
- Tutored data science analysis and machine learning in R and Python

Corporate Trainer — **Industrial Engineering with Discrete-event Simulation** — 2004 – 2016
BigBear.AI, McLean, VA
Performed instructional design, technical curriculum and training like
- **Lockheed Martin**, San Antonio, TX. F-22 and F-35 engine overhaul
- **NASA**, Kennedy Space Center, FL, optimizing paper-to-image system
- **NASA**, Washington, DC, space asset portfolio ETL, cost, and scenarios
- **West Point**, NY. War-based resources and logistic readiness planning

Riding Instructor — Taught horsemanship and performance care. Gone Away Farm — 2002 – 2012

CONTENT GENERATION, CURRICULUM, INSTRUCTIONAL DESIGN

Content Creator — www.Torah-aiAssist.com, owner — 09/2024 –
- Scanning rabbinical analysis to construct learning trees, ie ilanots
- Accelerated learning through nodal networks using graph-based AI models for structured text synthesis with dialogical logic
- Multi-source integration of Chumash, Midrash, Ramban, Rashi, Zera Shimshon, and Zohar, utilizing semantic mapping and hierarchical clustering to enhance interpretative linkage

Curriculum Specialist — **Quanthub** Learning Lab, Birmingham, AL — 10/23 – 12/23
State of Alabama 2023 skilling initiative: www.innovatealabama.org
- Edited and updated curriculum for instructional designers
  - AI Ethics, Prompt Engineering, and Workforce Impact
  - Innovate.alabama.Outcome.updated.python.curriculum

- Developed a AI curricula assessment engine and algorithms ensuring AI/ML topic relevance, depth, sophistication, and coding schemas
- Integrated scientific research articles, textbooks, and web scrapings
- Specified per line-item discrepancies and corrections

Writer — **Noodle, New York, NY, Elissa Lappendga, contract** — Mar - Aug 2023
graduate course: COSC-526, Introduction to Data Mining @ www.utk.edu

- Drafted a 10-module graduate curriculum in data mining with advanced algorithms and practitioner skills for: A.Spark, recommenders, MLflow

Content Writer — **Google Inc**, Learning Lab via synergis, NY, NY — 03/22 – 11/22
Coursera course: Google 2023 Advanced Data Analytics Certificate

- Lead writer for course 2 of 7, Get Started with Python
- Produced 21 instructional readings and 10 codebooks with >3000 lines
- Wrote two capstones w OLS, LR, MLR, logistic, chiSq, supervised, SVM
- Reviewed and edited scripts for construct correctness and continuity
- Trained in 18 E-Learning multimedia assets like prompts and quizzes
- Passed coding entrance exam and admitted to foobar.withgoogle.com

Technical Writer — **Alert Innovation,** Learning, Training, and Development — 11/21 – 03/22
Drafted complex robotic media for repair, service, for training

- 12 maintenance manuals, 11 service procedures, and 2 user manuals

Scientific Editor — Accdon, LLC Publishing Services, Waltham, MA — 07/20 – 06/21

- Trained with scientific style guide and edited 3 journal manuscripts

Instructional Design Southern New Hampshire University, Manchester, NH — Fall 2023
Specialize in dynamic generative AI and ASCII templates, including meta-design assessment and synthesis (left image), expertise with dynamic instructor-to-student design iterations, advanced compute methodologies like Google Cloud and advanced paradigms (right image)

IT-226 Communication in STEM Professions, uncontracted — Spring 2023

- Updated course with advanced persuasion writing skill methods
- Implemented polysyllabic learning for authentic voice principals

IT-304 Systems Design and Analysis, contracted — Fall 2022

- Performed for Python code, media, and lecture instructional design
- Updated reengineering methodologies and interactive learning bytes

Content Writer — **EXPO High School Summer Programs**, Norwood, MA — 04/21 -> 06/21

- Wrote AI/ML curriculum for instructor training: 50 pages, 10821 words

Instructional Design Simulation Consulting, **BigBear.AI**, McLean, VA — 2004 -> 2014
Performed instructional design and technical curriculum development for

- **Lockheed Martin**, San Antonio, TX. Wrote a customized simulation course for scheduling engine overhaul for F-22 and F-35 Lightning
- **NASA**, Washington, DC. Performed tools and curriculum for simulating space asset portfolio program mgmt with complex algorithms and ETL
- **West Point**, NY. Drafted curriculum for war-based logistics

SKILLS

>_ Generative AI & Ontology Engineering Skills

1. **AI Prompt Engineering**
   - Specializes in corpus synthesis, structured AI reasoning, and JSON LLM workflows
2. **Retrieval-Augmented Generation (RAG)**
   - Develops adaptive retrieval systems optimizing AI knowledge recall and structured inference (Mai et al., 2024)
3. **Ontology Engineering (OWL, IDEF0, Neurosymbolic AI)**
   - Constructs ontology-driven learning frameworks integrating symbolic & neural reasoning
4. **Cognitive Load Optimization & Instructional Compression**
   - Applies Cognitive Load Theory (Sweller et al., 2019) and Knowledge Learning Instruction (Koedinger et al., 2012) to AI instructional design
5. **AI-Driven Knowledge Representation & Reasoning**
   - Creates ASCII & 3D knowledge trees synthesizing hierarchical learning pathways
6. **Computational Complexity in AI Cognition**
   - Learning assembly theory-based scaling (Kempes et al., 2024) in gen AI models

>_ Statistics for Instruction

A. Bayesian - prepared to teach Bayesian inference & probabilistic modeling using established university materials
   a. Coursework: Reasoning with Data with R, (Stanton, 2017)
   b. Personal Study: Bayesian Essentials with R (Marin et al., 2014)

B. Frequentist - capable of instructing statistical learning methods, classification, and predictive modeling in academic settings
   c. *An intro to statistical learning*, (James, Witten et al. 2021)

Proficient	Advanced	Familiar	IDEs
Python, R, Office	APIs, C++, SQL, VBA, Google Scripts	Linux, SMSS, Matlab	Colab, Spyder, VS

- Research includes fact sheets, literature review, X9 bibliographic database
- Technical writing includes circuitry, robotics, and scientific instruments
- Distillation of complex scientific processes into plain language, like GeMM breeding
- Extensive modeling in DoD/manufacturing of human to human/system and system to system

RESEARCH

Research Volunteer 23-bed, 63-nurse and associate acute care floor 06/21 – 01/22
Winchester Hospital, Winchester, MA
Manager: Debra Barbuto, RN, MSN, debra.j.barbuto@lahey.org

A. Investigated the efficacy of evidence-based purposeful hourly rounding on patient falls and length of stay satisfaction, including
   - Designed data collection, encoded, and REDCap API transfer in **R**
   - Outcomes: adopted purposeful hourly rounding

B. Evaluated call bell signal standardization; located parts

EXPERIENCE

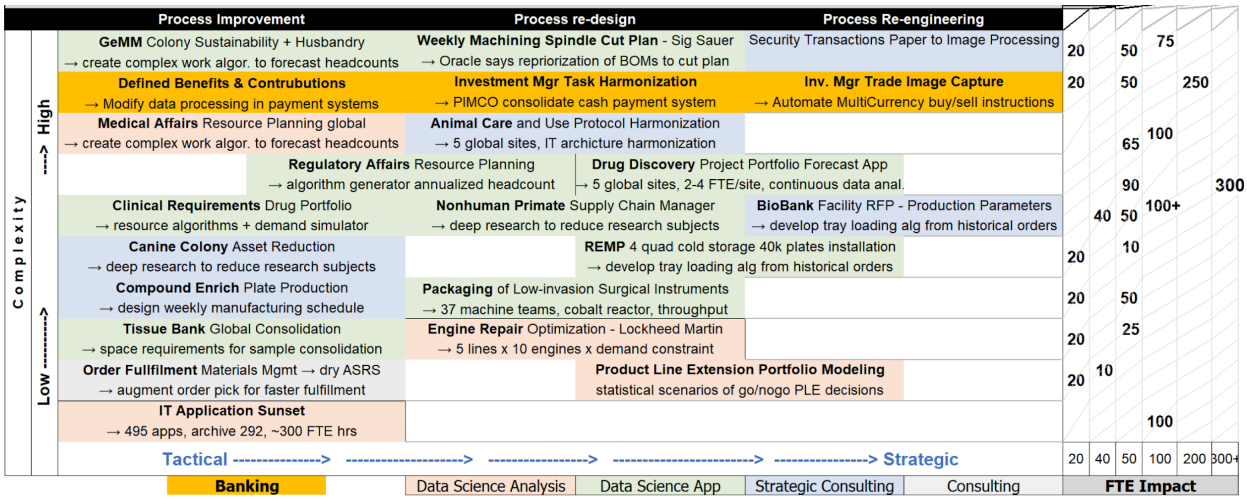
Engineer — **Industrial Engineering Simulation, BigBear.AI**, McLean, VA 2004 - 2016

Reengineered operations, systems, and applications in pharmaceutical, manufacturing, and defense with security clearance including

- Extensive modeling of human to human/ system and system to system
- Led client interactions and managed software development teams
- Delivered strategic assessments, specifications, and implementations
- Demand/constraint, resource/budget forecast, and program management
- Extensive modeling of human to human/ system and system to system
- Coded with C++ and system design with ER, EER, DFD, and IDEF0
    - Sample outcomes: laboratory systems Pfizer BioBank

Applied predictive and descriptive statistics to

- Nonhuman primate and GeMM breeding for loss, readiness and husbandry
- BIG pharma portfolio attrition, go/no-go, and resource requirements



LEARNING

i. Esoteric Theological Seminary, Rabbinical dissertation Fall 2024 - Winter 2025

- Seminary ThD - theory, methodology for www.Torah-aiAssist.com interactive AI

ii. Stanford Online: Statistical Learning Certificate Spring 2024

- An Introduction to Statistical Learning, by James, Witten, Hastie, Tibshirani

iii. Generative AI Training at DeepLearning.AI and Open.AI Spring 2023 - Ongoing

- Practical use case: Testing GPT 3.5 prompting for course grading and outcome

iv. Google Learning Lab, Multimedia asset design training Spring 2022

- Performed E-Learning multimedia training on 18 assets including readings, vignettes, segmentation, cognitive balancing, Flesch Kincaid, and signaling.

v. Amazon Web Services, Account ID: FpfKzlcOwkmK4YPzjMp3JA2 2020

- Performed training on the platform's stack across 14 academy classes, seven live twitch videos, and books by experts J. Simon, and C. Fregly, A. Barth.

vi. Data Science Specialization Certificate, Johns Hopkins via Coursera 2017

- https://www.coursera.org/specializations/jhu-data-science

vii. Re-engineering & Statistical Visualization Specialization Training

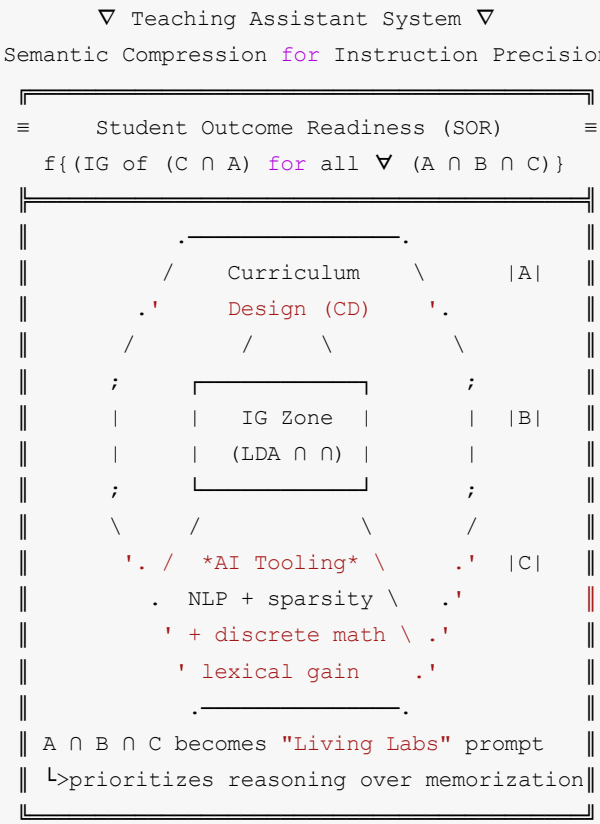
- Edward Tufte: Analyzing and Presenting Data and Information 2000
- Hammer and Company Reengineering Process Mastery 1999

RESEARCH INTERESTs

The neurosymbolic AI framework (below) transforms structured knowledge, like textbooks, into ontology-engineered knowledge bytes for large language models (LLMs) to dynamically assemble learning media. Research (Mai et al., 2024) confirms LLMs struggle with structured knowledge extraction, relying on pre-trained lexical patterns rather than true domain reasoning, aligning with my findings in hyper-plane transformations of textbook content. Given computational complexity (Kempes,2024), LLMs behave differently with higher-order knowledge, suggesting humans don't fully understand language processing (Chomsky, 1951),
└> **Plain English: <** neuronal AI mechanisms suggest humans don't grok language>

Orthodox Rabbinical scholars start memorizing Leviticus at age 5—a 5,785-year tradition preserved by only 2% of the world's population. This rigorous memorization fosters exceptional textual mastery like Rabbi Shimon bar Yochai's sefer Zohar. Smart tech erodes root memorization, and America's dont value it.' #Imagine the impact if high school students engaged in structured AI cognitive training astrobiology, chemistry, philosophy, and physics. Rabbinical evidence supports young learners# 'vast gray matter potential'. Assembly theory and computational complexity (Kemps, et al, 2024) suggests cultivating it early may extend cognitive complexity via genetics carried forward across generations. ~instructor.brian

[Research Statement - AI Learning Agent]



▼ AI tooling and language systems intersect generating clear, precise learning media
└> IG Zone detects semantic intersections with current and prior answers, creating adaptive prompts that compress complex material into accessible, plain English learning media
└> prioritizes reasoning over memorization
A=Curriculum, B=Tooling, C=NLP hive IG Zone>

SERVICE

Local Guide 7 — **Google Maps** — 2025 –
a) 323,735 views, 56 reviews, 1080 answers, 610 photos

Truck-to-Code Mentor — **Mobile.1.Compute.Laboratory** — 07/2024 –
b) Coaching long-haul truckers in programming & AI fundamentals, introducing 10+ drivers to hands-on coding with Python and Google Colab.

Career Advisor — **Harvard University**, Mignone Center for Career Success — 2021 –
c) Perform 2 to 5 resume reviews annually/recommendations. Idylla Louis

e-Donor
c) Student e-Equipment Donor, e-Trash Recycling, Winchester, MA 07/22 -
- This semester: 6 monitors, 1 gaming PC, and dozen cables
- Past: 19 monitors, 3 hard drives, 3 chips, and 1 graphic board

Club Advisor
d) **SNHU IT Student Association**, interim advisor 10/23 – 12/23

AWS Mentor
e) **Amazon Web Services Coding Jams** with RedRiver Labs 10/22, 04/23
- Entered 11 and 3 students in cross university competition

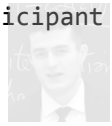
Mr. Fixit
f) **First Congregational Church** Repair Cafe, Winchester, MA, 03,06,09/2023
- Repair lamps, fans, and e-gadgets for the open public

Trash to Treasure
g) **Winchester high school Art Department & Jackson Lumber, Woburn** 2021
- Gathered cutoffs, paint, and supersize cardboard for Jenn Levatino

Coaching	**What**	**Focus**	**Date**
• SelenaW	Nurse.Asst	Nursing school skilling	11/23 – 01/24
• Lauren	Woburn,MA	GED literacy upskilling	09/23 – 11/23
• Andrew, Pietro	SNHU students	ADHD skilling development	06/23 – 08/23, 02/23 –03/23

HONORs

foobar participant — Google, Inc. Deep Linux research an invitation to allusive challenge
∞ Completed three before timed out



Lex Fridman — Finalist for Lex's personal secretary — 10/20 – 01/21
∞ Lex re-imaged toughness and I'm grateful for his consideration

Golden Key International Honour Society, Member — 2020 - 2021

RECOMMENDATIONS & BACKGROUND

- **Student smash board, .pdf**
- **Background - Benjamin Franklin - Checkr**

REFERENCEs

Jessica Kaufman, PhD
Professor of Biotechnology & Bioengineering
Interim Associate Dean of Science and Technology
Endicott College
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School of Engineering, Technology, and Aeronautics, Southern New Hampshire University
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I'm grateful for each person's generosity and support of my past recommendations such as

- David Primrose, MS, Oracle and Prof John Santerre - congrats working with Andrew Ng!

> With all forms of wisdom did she build her house; she carved out its seven pillars. She prepared her meat, mixed her wine, and also set her table. She has sent out her maidens, she announces upon the wings of the city heights: "Whoever is a simpleton, let him turn here!" As for the one who lacks heart, she says to him: "Come, partake of my food and drink of the wine that I have mixed. Leave, O simpletons, and live, and stride in the way of understanding." ~Proverbs 9:1-6