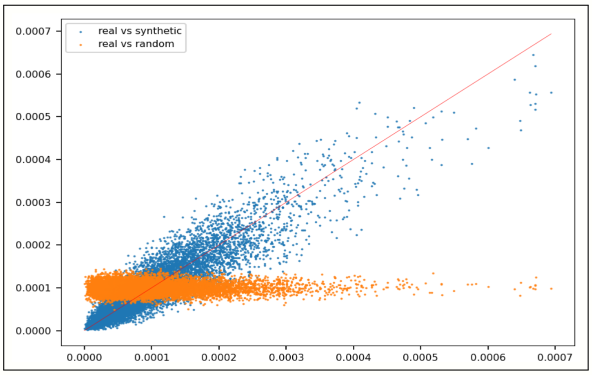
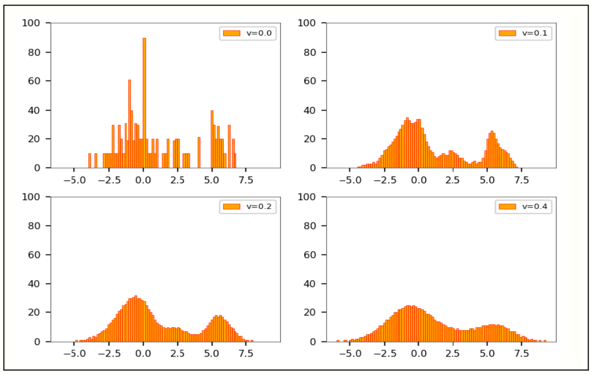
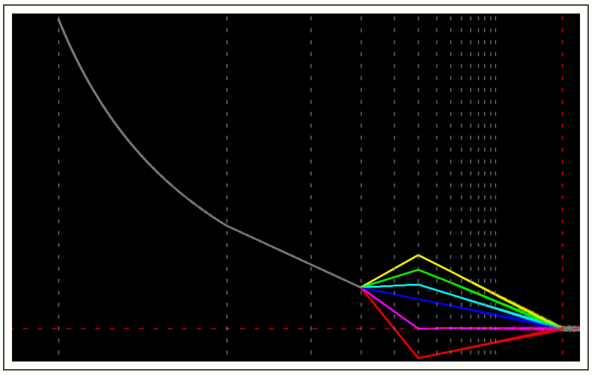
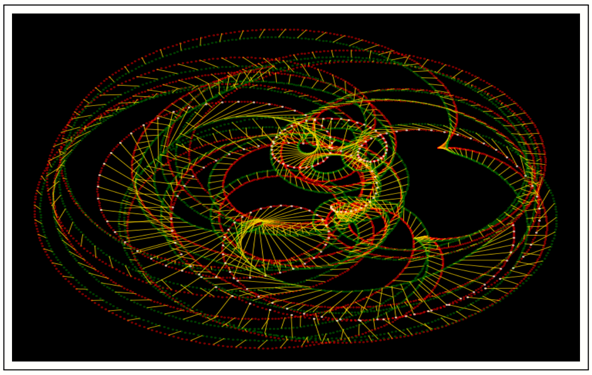
No-Blackbox, Secure, Efficient AI & LLM Solutions

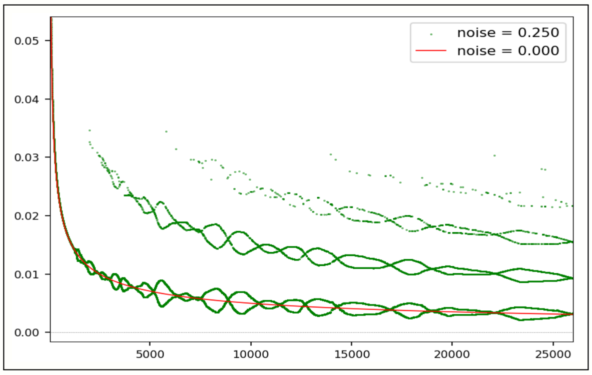
Vincent Granville PhD, Chief AI Architect, BondingAI.io
vincent@bondingai.io | linkedin.com/in/vincentg/
January 2026

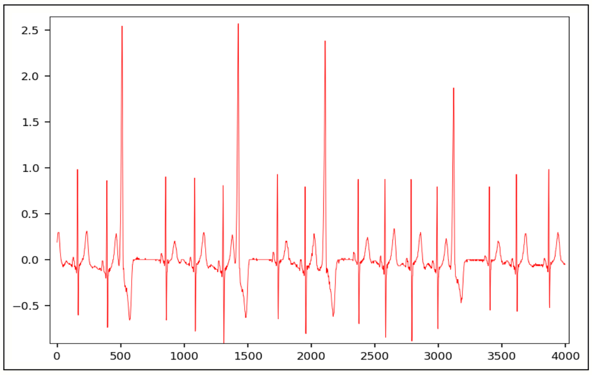


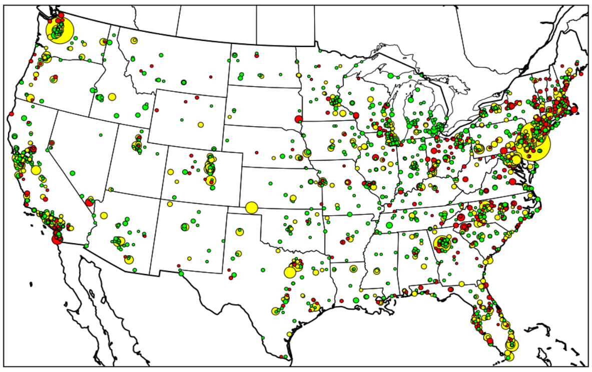


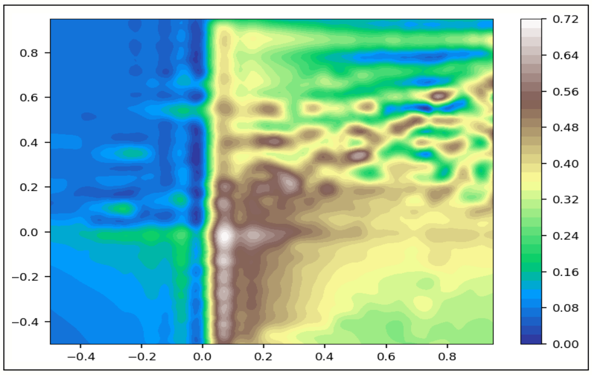












Preface

Large language models and modern AI is often presented as technology that needs deep neural networks (DNNs) with billions of Blackbox parameters, expensive and time consuming training, along with GPU farms, yet prone to hallucinations. This book presents alternatives that rely on explainable AI, featuring new algorithms based on radically different technology with trustworthy, auditable, fast, accurate, secure, replicable Enterprise AI. Most of the material is proprietary and made from scratch, showcasing the culmination of decades of research away from standard models to establish a new framework in machine learning and AI technology.

I discuss an efficient DNN architecture based on a new type of universal functions in chapter 4, with DNN distillation and protection via watermarking in chapter 5. Then, in chapter 6, I discuss non-DNN alternatives that yield exact interpolation on the training set yet benefit from benign overfitting in any dimension. Accurate predictions are obtained with a simple closed-form expression, without gradient descent or other iterative optimization technique, essentially without training.

Case studies include 96% correct predictions for the next token on a Nvidia PDF repository, automated heart beat clustering and unusually high data compression rates (big data), anomaly detection and fraud litigation linked to large-scale cybersecurity breach (large Excel repository, automated SQL, time series and geospatial data) as well as predicting next sequence on real-world genome data with home-made LLM technology. Some datasets with 1000 dimensions are generated with the best and fastest tabular data synthesizer on the market, described in details in chapter 2 along with the best model evaluation metric. These cases correspond to different agents linked to the xLLM technology (extreme LLM) developed by the author.

I barely use Python libraries other than Numpy, staying away from TensorFlow, PyTorch or Keras. It gives you full control over the code. Also, I avoid mathematical and probabilistic models when not beneficial, making the content accessible to a larger audience not versed in statistical, probabilistic or mathematical jargon. While classic books on the subject include an introduction to calculus, algebra, probability and matrix theory, here it is replaced by outside-the-box problems with solutions. It includes quantum systems, quantum approximation, non-causal signal processing, convolution, automated curve fitting without iterative algorithm, and deep dive into one of the universal functions central to my DNN, a sister of the famous Riemann zeta function in number theory.

About the author

Vincent Granville is a well-known pioneering AI scientist and machine learning expert, Chief AI Architect at BondingAI.io, author and patents owner with some related to trustworthiness scores. Vincent worked with Visa (credit card fraud), Wells Fargo, eBay (Google keyword campaigns), NBC, Microsoft, and CNET. He is currently working on no-Blackbox, auditable, hallucination-free secure Enterprise AI requiring no GPU and offering relevancy and trustworthiness scores in prompt results. Also, Vincent recently developed new, explainable deep neural network models along with distillation-resistant watermarking technology for model and data protection, to detect unauthorized uses.

Vincent is also a former post-doc at Cambridge University, and the National Institute of Statistical Sciences (NISS). He published in *IEEE Transactions on Pattern Analysis and Machine Intelligence* (500+ citations), *Journal of Number Theory*, and *Journal of the Royal Statistical Society* (Series B). He is the author of multiple books, available here, including “Synthetic Data and Generative AI” (Elsevier, 2024). Vincent lives in Washington state, and enjoys doing research on stochastic processes, dynamical systems, experimental math and probabilistic number theory. See Vincent’s profile on LinkedIn, here.

Contents