AVISHEK BISWAS

Email: neural.avb@gmail.com

9+ years of experience building end-to-end **scalable AI products** as **founding engineer** in multiple teams
Educational YouTube content creator (Neural Breakdown with AVB, 850K+ views) and founded **paperbreakdown.com**

GitHub: github.com/avbiswas | **X:** x.com/neural_avb | **Website:** neuralavb.com | **YouTube:** youtube.com/@avb_fj

Experience

Paper Breakdown

Founder | Jan 2026 – Present

- End-to-end SaaS where students get **paper recommendations**, **deep research**, and **study individual papers with AI**.
- React (NextJS), background jobs, databases, deploying custom ML models, building agentic systems, and serve it at scale.
- Building in public helped me grow my distribution network through writing original articles and creating video content. We organically reached **1200+ users** in 4 months, with **1900+ papers studied**, **6500+ queries answered**.

SocialTrait AI

Senior Deep Learning Engineer | Sept 2024 - Present

- Led the development of **multi-agent LLM-based systems to simulate social media interactions**. We built an RL env that lets AI personas study news patterns, post opinions, and interact with each other in a sandbox. This work is playing a pivotal role in **securing our Series-A funding**
- Automatic agent **skill discovery** through exploration and teacher distillation
- Design thorough **Persona Evaluation Frameworks** to assess the quality of our novel AI workflows across various metrics.

Quiq Inc

Senior Machine Learning Scientist | Jul 2022 - May 2024 | Bozeman MT, USA

- Primary author of **client-side lightweight small language models** (this is pre chat-gpt) that allowed call-center agents autocompleting messages as they type, **reducing their response times by 40%**. This was released to some of **Quiq's biggest clients** contributing majorly towards our revenue and contract extensions.
- Train **Transformers assisted embedding space** on live chat sessions between customers and businesses.
- As the **foundational data scientist in the company** I was the focal part of building several **end-to-end ML workflow** at Quiq hands-on - from data preparation, ML Ops, research, programming, model training, deployment, and user-studies.

Education

Master of Science in Computer Science | *Clemson University, USA (2019-2021)*

GPA: 4.0/4.0. Specialization: Data Science, Machine Learning, Artificial Intelligence

- **MS Thesis**: Training Physics-based Controllers for Articulated Characters with Deep Reinforcement Learning
- I worked as **Research Assistant** and **Teaching Assistant** (20 hours/week) while pursuing my Masters

Awards

- **Outstanding Master Student in Computer Science**, 2020 by the School of Computing, Clemson University.
- **Best Paper:** MIG 2021 for Motor Babble: Morphology-Driven Coordinated Control of Articulated Characters
- **Best Poster:** Training Physics Based Agents to Dance to Music, ACM MIG 2020

Educational YouTube Creator

- **YouTube (Neural Breakdown with AVB):** Visually rich Deep Learning explanations, paper reviews, and advanced project tutorials. The channel has gained **32,000 subscribers in 3 years with 850,000+ views.** Channel is community funded on Patreon and YouTube by over **2500 supporters and 140+ monthly paid members.**
- **Creator on X/Twitter (11K followers):** I regularly post high signal insights and technical articles.
- **Educational Articles:** Technical articles covering recent papers and algorithms on **Toward Data Science**
- **Courses created:** (1) Context Engineering with DSPy (2) Post-training Small Language Models (CPT, SFT, DPO, GRPO)

More Experience

Clemson University – Visual Computing Lab + School of Computing

Dec 2019 - May 2021

- **Graduate Research Assistant**: Simulation using physics engines, Training Deep RL agents in Tensorflow, Stable Baselines 3.
- **Graduate Teaching Assistant** for CPSC 6050 – **Computer Graphics** (Spring 2020) , CPSC 6420 – **Artificial Intelligence** (Fall 2020), CPSC 8810 – **Deep Reinforcement Learning** (Spring 2021)
- Working with professors and post-doctoral researchers was the **most important phase of my personal development**. Taught me to research, build my time management skills, and gave me the confidence to tackle hard problems.

Capgemini India

Senior Software Developer | Aug 2016 – Mar 2019

- My first job - Provide application security, patching, solution upgrades, and migration support as Oracle Apps DBA
- This is where I developed my skills in leadership, working in teams, and having high accountability in my work.

Projects

All of these works can be found either on my Github, or as a standalone tutorial video on my Youtube channel.

- **neural-txt**: Training **Small Language Models (SLM)** for research paper understanding that run locally on edge devices
- **text-albumentations**: Generate universal synthetic datasets from raw data using low level guidance and outlines
- **fast-rlm:** Recursive Language Models for long context understanding
- **mem0-dspy:** Lightweight Memory module for LLMs using DSPy, self-hosted locally
- Training **Vision Language Models (VLMs)** by finetuning text models using Q-Former architecture
- Finetuning **Small (<1B) Reasoning Language Models** from scratch using **GRPO** in Pytorch, Huggingface
- **Latent Space Manipulation** with Deep Feature Consistent Variational Autoencoders
- Text to Image **Conditional Latent Diffusion Models** to generate human faces
- Using **Seq2Seq LSTM plus Convolutional Autoencoders** to learn brain FMRI representations and detect ASD
- Multi-agent Obstacle Avoidance system with **CTDE (Centralized Training, Decentralized Execution)**

Skills

Python | Git | PyTorch | Unsloth | Hugging Face Transformers | TRL | TensorFlow | DSPy | LangChain | PostgreSQL | Vector DB | Next.js | React | Docker | Scikit Learn | Google Cloud Platform (GCP) | Fly IO | Stable Baselines | Numpy | Pandas | Cloudflare