

# Ifeanyi Desmond Dike

Port Harcourt, Nigeria — [ifeanyi@ifeanyidike.com](mailto:ifeanyi@ifeanyidike.com) — [ifeanyidike.com](http://ifeanyidike.com)  
[github.com/ifeanyidike](https://github.com/ifeanyidike) — [linkedin.com/in/ifeanyidesmondike](https://linkedin.com/in/ifeanyidesmondike)

## Research Interests

---

Full-duplex spoken dialogue systems, turn-taking and overlap handling in voice AI, evaluation methodology for interactive speech agents, multimodal AI (speech-video-language), temporal sequence modeling, numerical methods and PDEs, financial mathematics.

## Education

---

**MSc in Financial Engineering** 2026 – present

WorldQuant University

*Coursework: Financial Data Science, Machine Learning for Finance, NLP for Finance, Financial Econometrics, Deep Learning, Stochastic Modelling, Portfolio Management, Risk Management*

**Bachelor of Technology in Applied Mathematics (First Class Honours)** 2013 – 2018

Federal University of Technology Akure

Akure, Nigeria

GPA: 4.63 / 5.0

*Thesis: Couette-Poiseuille Reactive Fluid Flow with Variable Thermophysical Properties — coupled nonlinear PDEs, perturbation analysis, and finite difference numerics*

*Supervised by Prof. K.S. Adegbie*

## Preprints

---

**ATR: An Acoustic Turn-over Rate Metric for Evaluating Overlap Handling in Full-Duplex Spoken Dialogue Systems**

Ifeanyi Desmond Dike. *Zenodo*, June 2026.

[doi:10.5281/zenodo.20548903](https://doi.org/10.5281/zenodo.20548903) — [github.com/ifeanyidike/atr-metric](https://github.com/ifeanyidike/atr-metric)

**Evaluating Overlap Handling in Gemini 3.1 Flash Live: A Reproduction of Full-Duplex-Bench v1.5**

Ifeanyi Desmond Dike. *Zenodo*, May 2026.

[doi:10.5281/zenodo.20354457](https://doi.org/10.5281/zenodo.20354457)

**Reproducing Full-Duplex-Bench: Evaluation of Gemini 3.1 Flash Live on Turn-Taking and an Analysis of ASR Backend Sensitivity**

Ifeanyi Desmond Dike. *Zenodo*, May 2026.

[doi:10.5281/zenodo.20305268](https://doi.org/10.5281/zenodo.20305268)

## Peer-Reviewed Publications

---

**Fast Prediction of Equivalent Model of Installed Patch Antenna Radiation Pattern**

H. Monday, J. Li, M. Raji, G. Nneji, **I. Dike**, R. Nneji.

*IEEE IEMCON 2018*, pp. 286–291.

**An Improved e-Clearance Management System for Graduating Students in a University Environment**

G. Nneji, J. Deng, S. S. Shakher, H. Monday, D. Agomuo, **I. Dike**.

*IEEE IEMCON 2018*, pp. 74–80.

**Enhanced Attendance Management System: A Biometrics System of Identification Based on Fingerprint**

H. Monday, **I. Dike**, J. Li, D. Agomuo, G. Nneji, A. Ogungbile.  
*IEEE IEMCON 2018*, pp. 500–505.

### **Design of an Improved Cost Effective Electronic Locking System**

H. Monday, J. Li, G. Nneji, C. Ukwuoma, **I. Dike**, R. Nneji.  
*IEEE IEMCON 2018*, pp. 493–499.

## **Awards & Honors**

---

**Gold Medal** — National Mathematics Competition for University Students (NAMCUS) 2017  
Mathematical Association of Nigeria.

**Bronze Medal** — National Mathematics Competition for University Students (NAMCUS)  
2016  
Mathematical Association of Nigeria.

**First Class Honours** — Applied Mathematics, FUTA 2018  
GPA 4.63/5.0.

## **Research Experience**

---

**Independent Researcher** 2026 – present  
*Full-Duplex Spoken Dialogue Evaluation*

- Proposed ATR, a VAD-based turn-taking metric replacing Full-Duplex-Bench’s ASR-dependent TOR; reduced cross-backend disagreement from up to 23.5 pp to within 7.6 pp on identical audio
- Reproduced Full-Duplex-Bench v1.0 and v1.5 (Lin et al., 2025) for Gemini 3.1 Flash Live Preview on Apple Silicon without CUDA
- Conducted first systematic analysis of ASR backend sensitivity in full-duplex evaluation — showed TOR varies by up to 62× across backends on identical audio
- Evaluated overlap handling across four scenarios; found systematic prosodic adaptation (higher pitch/WPM, lower intensity) after overlap events
- Three papers published on Zenodo (all single-author); arXiv submission in progress

## **Industry Experience**

---

**Founding AI Engineer** — Datastrut AI, New York, U.S. (Remote) 2025 – present

- Built voice AI agents deployed in production for major U.S. construction contractors including Zachry Group, one of the largest privately held contractors in the U.S.
- Designed multi-caller feature enabling real-time AI-assisted collaboration between foremen and supervisors; closed enterprise deal with ICON Mechanical
- Conducted memory profiling and performance audits across all four microservices; identified and resolved CPU and memory bottlenecks that were costing thousands of dollars per month in cloud spend, reducing infrastructure costs by over 80%
- Migrated voice AI infrastructure from VAPI to self-hosted Pipecat on Fly.io

**Co-Founder & Lead Developer** — Cenphi, Remote 2025 – present

- Built multimodal pipeline jointly reasoning over speech, video, and language for testimonial intelligence
- Automated highlight extraction and sentiment scoring across 500+ hours of customer video; reduced manual review time from days to under an hour per campaign
- Speaker diarization, sentiment analysis, and highlight extraction at scale

**Senior Software Engineer** — Arbor Platform Inc, New York, U.S. (Remote) 2023 – 2024

- Integrated LLMs into video production workflows; 80% efficiency gain
- Built AI-assisted editing features that automated repetitive post-production tasks, reducing human review time across video content pipelines

**Senior Software Development Engineer** — Howdy Learning, New York, U.S. (Remote)  
2020 – 2023

- Re-engineered WebSocket infrastructure; CPU usage reduced by 99%+
- Built real-time user presence system enabling live collaboration and activity tracking across community members; tracked video call progress and online status in real time
- Live video stream platform scaled to 10,000 concurrent connections

**Software Engineer** — Bujuwa Nigeria Limited, Nigeria 2018 – 2020

## Technical Writing

---

Engineering blog at [ifeanyiidike.com/blog](https://ifeanyiidike.com/blog) — six deep-dive posts on voice AI evaluation, real-time systems, and production infrastructure, including:

- [Moving Our Voice AI to Pipecat: The Parts Nobody Warns You About](#) — migrating a production voice agent from a managed platform to a self-hosted pipeline
- [DeepFilterNet vs RNNoise](#) — benchmark-driven comparison of noise suppressors for real-time telephony pipelines
- [Profiling Python Memory in Production](#) — native-level memory profiling of live services under load

## Technical Skills

---

**ML & AI:** PyTorch, HuggingFace Transformers, deep learning, LLM fine-tuning, RAG, vector databases, multimodal pipelines, computer vision

**Speech & Voice:** speech processing (Whisper, MLX, AssemblyAI), speaker diarization, voice AI (Pipecat), real-time audio streaming, evaluation methodology

**Programming:** Python, TypeScript, Golang, Rust, C++

## References

---

**Prof. K.S. Adegbe** — Department of Mathematics, FUTA

**Prof. B. Omolofe** — Department of Mathematics, FUTA

**Dr. S.O. Afolabi** — Department of Mathematics, FUTA

*Full contact details available on request.*