Sourodyuti Biswas Sanyal



AI & Computer Vision Researcher • Technical Co-Founder, CURAA • Builder

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Read the paper Friday, ship the implementation Monday.

HIGHLIGHTS

- **Paper accepted — IEEE SPACE 2026:** *Progressive Knowledge Distillation Framework for Military Vehicle Classification on Edge Devices.* ResNet-18 student beats its ResNet-50 teacher (89.38%); 1.6 MB TFLite model running on Android in 100–300 ms.
- **Champion — COMSYS Hackathon 7,** International Conference on Frontiers in Computing & Systems (COMSYS-2026): Team Vic-Trio; handwritten multi-script segmentation & recognition. **Rank #1** on the public leaderboard (score 0.766).
- **Top 5 Best Poster — IndiSetu Kolkata 2026** (July 2026): liver-tumour segmentation on LiTS CT with a SLIC-superpixel Swin-UNet, benchmarked against SAM2, MedSAM and MobileSAM.
- **Technical Co-Founder, CURAA** — AI smart pet collar (curaapets.com). **Selected for Atal Incubation Centre** cohort (2026).
- **Grade O — AICTE × EduSkills** AI/ML Internship (2024); certified: Oracle Cloud, Google Cloud GenAI, Unstop; BIT Mesra Leadership Bootcamp.

EDUCATION

B.Tech, Computer Science & Engineering 2024 – 2028
Techno India University, Kolkata · **SGPA 7.98/10** (3rd semester, latest)

ISC (Class XII) — St. Michael's School, Durgapur · **77.5%** (English + best 3) 2024

ICSE (Class X) — Dr. Graham's Homes, Kalimpong · **83.2%** (English + best 4) 2022

EXPERIENCE

Co-founder — Curawave LLP 2026 — Present
Registered engineering company.

- Cardiosense AI (client), 2026: built embedded firmware, on-device ECG signal analysis and an Android app for a portable cardiac-screening research prototype, delivered under formal change control.

Technical Co-Founder — CURAA 2024 — Present
AI smart pet collar: vocalization and movement → behaviour patterns, processed on the paired phone. AIC-incubated; live waitlist at curaapets.com.

- Built the full stack: ESP8266/ESP32-S3 collar prototype (microphone, IMU), FreeRTOS firmware, sub-200 KB TinyML bio-acoustic engine classifying vocalizations and movement into behaviour patterns; Flutter app + React web + Cloudflare Workers backend.
- Led technical roadmap through Atal Incubation Centre selection alongside co-founders Aritra Biswas & Krishnendu Dhar.

PUBLICATIONS

[1] K. Dutta, A. N. Gorain, S. Mondal, **S. Biswas Sanyal**, A. K. Biswas, and N. Das, "Progressive Knowledge Distillation Framework for Military Vehicle Classification on Edge Devices," in *Proc. IEEE Space, Aerospace and Defence Conf. (SPACE 2026)*, Bengaluru, India, 2026. [**Accepted**]

[2] K. Dutta, A. N. Gorain, and **S. Biswas Sanyal**, "EdgeRF: Sub-Megabyte Drone Controller Identification at Low SNR and a Leakage-Aware Re-evaluation of DroneRF," for *IEEE Radar Conference (RadarConf 2027).* [**In preparation**]

SELECTED PROJECTS

- **EdgeRF** 2026
  RF drone-controller identification for edge devices (paper in preparation, RadarConf 2027). 99.89% across 17 RC controllers with one SNR-agnostic model (prior best 95.62%); 0.59 MB INT8 model, ∼2 ms per CPU inference. Also exposes train/test leakage that inflates published DroneRF results.

- **Delta Terminal** 2026
  Rust-native terminal for BTC/ETH futures & options: neural-ensemble inference wired directly to raw exchange feeds, options chains with Greeks/IV/OI, and a headless CLI built for AI-agent operation. ∼90 MB resident; sub-millisecond internals.

- **Legilimens** 2026
  2nd Runner-Up, Best Actian Usage — HexaFalls 2.0 (JIS University, 36 h). One-button "confusion radar" for live classrooms: students signal confusion, the system returns a personalized voice explanation in seconds via hybrid BM25 + vector retrieval — fully on-premises, zero student-data egress.

- **HeartSense** 2026
  Contactless vital-signs screening from a phone or webcam in 30 s via rPPG: heart rate, SpO_2, respiration, HRV and stress, fully offline. MediaPipe face-mesh ROIs, camera exposure lock, POS/CHROM signal extraction with Kalman tracking, and a confidence gate that mutes output on poor signal. Released Android APK, verified on real hardware.

- **Liver Tumour Segmentation** 2026
  Top 5 Best Poster — IndiSetu Kolkata 2026. SLIC-superpixel post-processing on a fine-tuned Swin-UNet lifts tumour precision from 0.875 to 0.982 on LiTS (131 CT volumes, 58.6k slices); liver Dice 0.86. Benchmarked against SAM2-Tiny, MedSAM, MobileSAM and PicoSAM.

- **COMSYS Hackathon 7** 2026
  Rank #1 (0.766), international hackathon of the COMSYS-2026 conference. Multi-script handwritten segmentation & recognition from degraded archival scans — YOLO + ConvNeXt ensemble with test-time augmentation.

- **Distillation Lab** 2024–2026
  Research program behind the IEEE SPACE 2026 paper. Progressive three-stage teacher → assistant → student pipeline across CNNs and Vision Transformers, plus attention transfer, multi-teacher and cross-architecture distillation; validated on CIFAR-10, MedMNIST, and a 6-class military vehicle dataset.

TECHNICAL SKILLS

Languages	Python, TypeScript, Rust, C++, Dart, Kotlin, SQL, Pine Script
ML / Vision	PyTorch, TensorFlow, OpenCV, Ultralytics YOLO, ViT/Swin, SAM2, knowledge distillation, ONNX, TensorRT, TFLite
Edge / HW	ESP32/ESP8266, TinyML, TFLite Micro, FreeRTOS, BLE, embedded Rust
Full-Stack	React/Next.js, Flutter, Hono, FastAPI, Cloudflare Workers, PostgreSQL, Redis, Docker
Quant	Options Greeks, market microstructure, CVD/GEX, backtesting (vectorbt)

CERTIFICATIONS & AWARDS

2026 **Champion — COMSYS Hackathon 7**, International Conference COMSYS-2026 — Rank #1 · score 0.766

2026 **2nd Runner-Up, Best Actian Usage — HexaFalls 2.0**, JIS University — (Legilimens)

2026 **Paper accepted — IEEE SPACE 2026**, ORCID 0009-0003-3809-9448

2026 **Top 5 Best Poster**, IndiSetu Kolkata 2026 — (Liver Tumour Seg.)

2026 **AIC Incubation — CURAA**, Atal Incubation Centre

2024 **Grade O — AI/ML Internship**, AICTE × EduSkills

2024 **Leadership Bootcamp**, BIT Mesra

2023 **Oracle Cloud**, **Google Cloud GenAI**, **Unstop** — certified