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SUMMARY

Physics undergrad at Bilkent building computer vision and ML systems that have to run unattended, and checking my own measurements before they become claims. Open to internships and part-time remote work.

EDUCATION

Bilkent University

Turkey

B.S. in Physics, expected 2028

Sep 2022 – 2028

- Relevant coursework: Artificial Intelligence (CS461), Machine Learning (CS464), Probability and Statistics (MATH230), Programming in Python (CS115), Advanced Calculus for Physics (MATH242).
- Bilkent Comprehensive Merit Scholarship (full); TÜBİTAK Undergraduate Scholarship in Basic Sciences; TEV Outstanding Achievement Scholarship.

PROJECTS

Greenhouse person detection and monitoring | *Python, PyTorch, ONNX Runtime, OpenCV*

- Six cameras, an ESP32 climate node and irrigation on a 4G line; detection on a home GPU server, alerts and HLS live view in a family web app. Moving detection to the DVR sub-stream cut 4G traffic from 4.2 to 1.45 GB a day at almost no recall cost.
- Trained a 19.4M-parameter D-FINE-M student on 13,668 frames selected from 125,900 pseudo-labelled by a D-FINE-X teacher, with static clutter mined as hard negatives. On 2,918 frames I labelled myself, from days with no overlap with training, it finds 94.1% of people at a 3.8% false-positive rate, against 49.8% for stock YOLO11s (AUC 0.981 vs 0.863).
- Deployed 21 Sep 2026 behind a shadow run and automatic fallback. Earlier, a week of live alarms (57 false, 61 true) showed my offline test could not fail the model, and my first fine-tuned detectors only won on a leaky split.

thelecturenotes.com | *Python, Django, PostgreSQL, GitHub Actions, Cloudflare*

thelecturenotes.com

- Course site for Bilkent students that I run alone: about 3,000 past exams and notes, a page per course, a schedule builder. A daily pipeline pulls public course data (972 courses, 1,971 sections), rebuilds 3,548 static pages and deploys only if a 39-suite headless-browser and data test gate passes; it has stopped a deploy carrying two real bugs.
- Found and fixed a caching bug that had frozen seat data for about four weeks (58.6% full shown vs 89% real on registration day). Moved the API off Fly.io to my own server behind Cloudflare Tunnel. 1,286 Google clicks in the four weeks to 22 Sep 2026, up from 122.

Player tracking for amateur football | *PyTorch, RF-DETR, OSNet re-ID, OpenCV*

github

- Fisheye and pitch calibration, detection and offline tracklet stitching: IDF1 0.835 on a 2-minute window, against 0.515 for raw tracklets and 0.574 for BotSort, on LLM-agent-built ground truth that leaves out the hardest identities. Over a full 32-minute match it still fragments into 698 identities.

Where local LLMs get arithmetic wrong | *Python, Ollama, Transformers*

- gemma3:12b got 27 of 80 yes/no constraint checks wrong, and all 80 right when it translated the constraint into Python for code to evaluate. Scoring the same data with 7 evaluators gave 4 different winners, so I name the evaluator with every gain.

PUBLICATIONS

Texture Radiomics Outperforms Mean CT Attenuation for Sclerotic Bone Lesions. Manuscript in preparation. The clinical question and the lesion data are my collaborator's; my part was the analysis: 180 lesions, 120 patients, AUC 0.985 ± 0.018 under patient-grouped nested CV (mean density 0.776). Single centre, needs external validation.

Minimizers of the Seidel Quadratic Form: Exact Optimum Counts for $n \leq 14$. Sole author, preprint, doi:10.5281/zenodo.22018437.

TECHNICAL SKILLS

Languages: Python, SQL, JavaScript, Bash, LaTeX

ML and vision: PyTorch, OpenCV, ONNX Runtime, scikit-learn, D-FINE, RF-DETR, YOLO, FFmpeg, Transformers, Ollama

Systems: Linux, systemd, Docker, PostgreSQL, Django, FastAPI, GitHub Actions, Cloudflare Pages/Workers/D1/R2