PETER A. SAYEGH

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EDUCATION

Columbia University　　　　　　　　　　　　　　　　　　　　　　　　　　　New York, NY
MS in Electrical Engineering – Nikola Tesla Scholarship, GPA: 3.85/4.3　　　　　　Expected Dec 2026
Coursework: Digital Signal Processing, Adv. Analog Integrated Circuits, Power Electronics, MOS Transistors, Analog-Digital Interfaces in VLSI, Embedded AI, Microwave Circuit Design
Activities: Lead Department Representative for Electrical Engineering within the Engineering Student Graduate Council (EGSC)

Ecole Polytechnique　　　　　　　　　　　　　　　　　　　　　　　　　　　Palaiseau, FR
BS in Mathematics and Physics, GPA: 3.75/4.0　　　　　　　　　　　　　　　　　Jun 2025
Coursework: Convex Optimization, Stochastic Processes, Electrodynamics, Adv. Quantum Physics, Thermodynamics, Statistical Physics, Condensed Matter, Algorithms, Numerical Analysis, Web Programming, Object-Oriented Programming, Machine Learning

ELECTRICAL ENGINEERING PROJECTS

Columbia University　　　　　　　　　　　　　　　　　　　　　　　　　　　New York, NY
Runway Detection for Autonomous Aircrafts　　　　　　　　　　　　　　　　　Sep - Dec 2025
- Developed Hough Transform and RANSAC filtering pipeline, validated on ~6,000 simulated flight approach images
- Implemented geometric validation constraints (parallelism, vanishing point) under varying weather and distance conditions

Columbia University　　　　　　　　　　　　　　　　　　　　　　　　　　　New York, NY
On-chip CMOS Feedback Amplifier Design　　　　　　　　　　　　　　　　　　Sep - Dec 2025
- Designed a two-stage Miller-compensated OTA in 0.25 μm CMOS, achieving 95 dB gain, 81.5° phase margin, and 407 kHz closed-loop bandwidth with <1% overshoot
- Optimized compensation network (3 pF, 1 kΩ) to drive 20 pF load while consuming 247 μA, 50% below power budget

Columbia University　　　　　　　　　　　　　　　　　　　　　　　　　　　New York, NY
All-Region DC Model for MOSFET with Physics-based Parameter Extraction　　　　Sep - Dec 2025
- Developed MOSFET model incorporating mobility degradation, body effect, and channel length modulation effects
- Achieved $O(N)$ complexity at 380 μs per evaluation with continuous DC characteristics passing industry benchmark tests

Ecole Polytechnique - Center for Theoretical Physics　　　　　　　　　　　　　Palaiseau, FR
Dynamic Stability and Levitation Control in Magnetic Levitation (Maglev) Systems　Feb 2024 - Jul 2025
- Designed and constructed a scaled Maglev train prototype using magnetic field analysis, achieving 96% theoretical validation
- Extrapolated results to a real Electromagnetic Suspension engine scale, predicting capacity within 2% of Shanghai Maglev

EXPERIENCE

Ecole Polytechnique - Hydrodynamics Laboratory　　　　　　　　　　　　　　Palaiseau, FR
Bachelor Thesis Research Intern　　　　　　　　　　　　　　　　　　　　　Jan - Mar 2025
- Devised a neural network framework leveraging JAX to model Rogue Waves, with less than 0.5% error
- Enhanced model performance via causal training algorithms, reducing convergence time by 60%
- Applied numerical wave analysis methods, attaining a 2% average L^2 error against analytical solutions

TriSpan LLP　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　New York, NY
Private Equity Intern　　　　　　　　　　　　　　　　　　　　　　　　　　Jul - Aug 2024
- Streamlined Profit & Loss reporting across 10 portfolio companies using Excel
- Conducted Leveraged Buyout modeling using Excel and Bloomberg terminals
- Drafted valuation reports using Discounted Cash Flow analysis for portfolio companies worth $200M+ in assets

TECHNICAL SKILLS

Programming Languages: Python, C++, Arduino, R, MATLAB, HTML, CSS, JavaScript, QML
Data Science and Machine Learning: TensorFlow, Keras, JAX/Optax, scikit-learn, NumPy, SciPy, pandas, statsmodels
AI Frameworks: DSPy, Agno, Gepa
Scientific Computing: QuTiP, Scikit-HEP, PySpice
Hardware and Circuit Design: Cadence Spectre, PLECS, LTSpice, Keysight ADS
Tools and platforms: LaTeX, Git, Jupyter
Languages: French (Native), Arabic (Native), German (Advanced), Spanish (Intermediate)