# Ericson P. Kimbel, II

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## Education

**University of Pittsburgh (3.64 GPA) 2024-Present**
BSE Bio-Engineering (Medical Product Engineering concentration), Pre-Med track; MS Medical Product Engineering, Accelerated EAGr dual-degree (BS Dec 2027, MS Dec 2028). Minor: Chemistry. Certificates: Innovation, Product Design, and Entrepreneurship; Conceptual Foundations of Medicine. Dean's Honor List: Fall 2025, Spring 2026; Term Honor List: Spring 2025.

**Penn State University, New Kensington Campus (3.8 GPA) 2022-2024**
Biomedical Engineering (BS) major, Medical Imaging and Devices subplan, and Pre-medicine. Dean's List all terms. Goalkeeper for Men's Soccer (USCAA Division II; PSUAC): PSUAC All Conference Award 2022 and 2023.

**Shady Side Academy, Middle and Senior Schools 2015-2022**
Linear Algebra, Intro to Multivariable Calculus, AP Calculus BC, Physics 3, Intro to AI, Latin IV; William C. Nealon Art Award.

## Objective

Sleep Medicine Physician (Somnologist). Goal: educate, treat, and help people afflicted with sleep apnea and related sleep disorders through AI, custom medical devices, and local inference pipelines. Along the way: design and improve medical devices, therapies, and automated detection methods for better patient outcomes.

## Experience

**Student PI, Sleep Apnea Cognitive Research (IRB STUDY26010062) 2022-Present**

- Multi-institution IRB protocols (Penn State and Pitt). IRB-approved, HIPAA-aligned study comparing untreated OSA, treated OSA (CPAP), and healthy controls; currently in peer review at Pitt. I designed the entire study from the ground up and lead it end to end. Received academic credit four times: MATH 296 twice, honors ENGL 202C, and BIOENG 1002.
- Created cognitive battery (RCRFB) from scratch: 60,000+ lines of Python, 91 automated test suites, under 1 ms measurement overhead, and 99.99% frame stability. Runs offline on participants' own hardware, with human and hardware verification before testing.
- Automated data-processing pipeline combining deterministic processing with probabilistic processing (LLMs) to flag and detect every possible variation in the data, with human oversight; analysis pipeline verified 18/18 on synthetic data.

**Independent Expert Consultant, Independent 2026-Present**

- Advising institutional investors (hedge funds, PE, research funds) on AI compute and GPU/accelerator hardware through multiple expert networks under NDA. Also consult for law firms, university research labs, and biotech/medical device R&D.

**Local AI Research and Web-Scraping Agent, Kimbel Law Offices 2026-Present**

- Uncensored, vendor-independent, fully local, autonomous AI research and web-scraping agent (LM Studio, llama.cpp, self-hosted SearXNG, MCP tool-calling) returning schema-validated output. Restart-safe; tested multi-day and multi-week.

**AI-to-Hardware Medical Device R&D, Independent 2026-Present**

- Generative AI-to-hardware framework for patient-specific medical devices, running 100% locally on my own AI systems, not cloud models. Lead on custom-fit CPAP mask (tested on myself as Patient Zero). Built a 10,000+ line local AI CAD assistant (Python and FreeCAD API).

**Patent-Pending Inference Optimization Research, Independent 2024-Present**

- Sole inventor on patent-pending work. Research cluster: 2x NVIDIA DGX Spark GB10, ASUS P16 Spark laptop, ROG Flow Z13, ASUS ROG Phone 7 Ultimate. MoE models up to ~2.8T parameters; trained models from scratch and fine-tuned trillion-parameter MoE models.

**Hardware Thermal Engineering, Independent 2020-Present**

- 3rd place global AnTuTu record (ASUS ROG Phone 7 Ultimate, 1,591,570) using custom thermoelectric cooling, deep OS stripping, and aggressive thermal profiling; under-volt sweeps across AMD/Intel/NVIDIA/Qualcomm.

**LitCon Group, LLC, Paid Internship Summer 2021**

- Researched, analyzed, and created background reports for business development; document reviews and case management assistance for litigation matters.

**Senior Design Team 11, Medication Management System (BIOENG 1160) Fall 2026-Present**

- Wrote the Step 1 medical device determination and the proposed FDA regulatory pathway; co-wrote the 13 biological and chemical hazards (ISO 14971).

## Skills

**Languages:** Python, C++, C, C#, MATLAB, JavaScript, HTML, SQL, Shell/Bash, PowerShell, Rust (dabbled), Assembly (dabbled).
**AI/ML:** Local LLM inference, agentic systems, custom agent harnesses and verification pipelines, RAG, fine-tuning (QLoRA, LoRA, full-parameter), training from scratch, quantization (NVFP4, GGUF, GPTQ), speculative decoding, MCP tool-calling.
**Tools:** LM Studio, llama.cpp, PyTorch/CUDA, TensorRT, vLLM, Docker, PsychoPy, FreeCAD, Git/GitHub.
**CAD/Fabrication:** FreeCAD (Python API, AI-assisted modeling), FEA analysis, 3D printing and 3D scanning, injection molding, vacuum forming, metrology, soldering, PCB design, milling, lathe, welding.
**Systems/Regulatory:** Requirements, use cases and user needs, ISO 14971 hazard analysis, FDA classification and 510(k) pathway, design controls, V&V test planning, IRB protocols.
**Campus Engagement:** Teaching Assistant, BIO-E Circuits Lab (Fall 2025); Pitt Biomedical Engineering Society; Penn State New Kensington Tutor, up to 20 hours per week, including Physics 2 while taking it (above 100%); Student Government Parliamentarian; Penn State Esports Team; Math Club Vice President; NSLS (Presidential Member, Penn State; Member, Pitt).