Tomas El-Bogdadi

telbog@umich.edu | (571) 510-2282 | linkedin.com/in/telbogdadi | tomaselbogdadi.com

EDUCATION

University of Michigan | College of Engineering, *Bachelor of Science* *May 2027*
Major: Chemical Engineering; **Minor:** Biochemistry; **Concentration:** Life Sciences **GPA:** 3.234/4.0
Relevant Coursework: Advanced Biochemistry, ChE Reaction Engineering Design, ChE Process Dynamics & Control
Activities: Michigan Club Soccer VP, Michigan Embedded Systems Hub, Michigan Short-Term Trading Co-founder

EXPERIENCE

Physioform Labs (Stealth) | Founding Engineer *August 2026 – Present*
- Building a performance physiology platform that converts metabolic lab test results into athlete profiles and training prescriptions, replacing the manual workflows sports physiologists rely on today

Oaklet (backed by Forum & YC) | Software Engineering Intern, Bozeman, MT *May 2026 – August 2026*
- Proposed and launched a white-label intake platform that allows patients to complete medical intake and pay for a prescription from a manufacturer's own branded site, with a clinical EHR where physicians review each case and send the prescription, powering 2 Fortune 500 pharma manufacturers and 122 doctors across 50 states
- Conceived and launched a handwritten letter campaign to 600 pharma manufacturer C-suite executives pitching the direct-to-patient platform, landing 12 new manufacturer partnerships and $5.5M in pilot pipeline
- Spearheaded the internal analytics dashboard Oaklet and its manufacturers now use to measure each doctor's efficiency and platform health, tracking time from review to prescription, drug performance, case volume, API errors, and latency

Baker Lab, Michigan Biomedical Engineering | Research Assistant, Ann Arbor, MI *September 2025 – May 2026*
- Modeled mechanisms of cardiac fibrosis by tuning matrix stiffness in fibroblast-embedded synthetic hydrogels to engineer a 3D pro-fibrotic microenvironment, probing how biomechanical and biochemical cues drive fibroblast differentiation
- Recovered compromised cell vials after a nitrogen dewar malfunction, personally restoring roughly $10K in hiPSC, cardiomyocyte, and cardiac fibroblast stock through reseeding, monitoring, splitting, and cryopreservation

Key Kesan Dallmann PLLC | Legal Intern, Tysons Corner, VA *May 2025 – August 2025*
- Drafted claim charts and microscopy-based technical diagrams mapping a heteroepitaxial advanced-node patent onto FinFET process structures, identifying 80 processors across 17 product lines for microscopy-lab imaging
- Conducted a claim-by-claim infringement analysis of two passive-radiative-cooling coating patents against the commercial self-cooling paint market, presenting 6 new infringement targets to a panel of 12 PhDs

TECHNICAL PROJECTS

Propoxity: Indirect Calorimetry Mask for VO_2 max and Lactate Threshold Estimation
- Inventing a wearable metabolic analyzer that fuses galvanic O_2, NDIR CO_2, and differential-pressure flow sensors on an ESP32-S3 microcontroller, computing VO_2, VCO_2, and RER on-device from a custom indirect-calorimetry model

Cell Counting Machine: CNN Trained to Recognize and Count Cells for Stem Cell Differentiation
- Designed and trained a 409k-parameter CNN on 19,200 microscopy images to count cells for cardiomyocyte differentiation timing, reaching a test MAE of 1.35 and R^2 of 0.97

Cyclo-RGDfK: Greener Cyclization and Separation Process for a Cyclic Peptide
- Redesigned an MIT-developed synthesis of cyclo-RGDfK, replacing high-dilution batch cyclization and repeated flash chromatography with continuous-flow thiol-ene chemistry and a single HPLC pass, nearly doubling projected yield

Propylene Plant: Scale-Up Economics and Site Selection for a Novel Membrane Reactor
- Costed the scale-up of a membrane reactor tested only at lab scale into a 50,000 kg/h propylene plant with a team of four, building the capital estimate and 30-year cash flow model that backed Houston over Canada at an $88M NPV

Geiger Counter: Engr 100 Raspberry Pi Radiation Detector
- Assembled a working Geiger counter with a team of four, hand-soldering its high-voltage booster, pulse inverter, and filter stages and wiring it to a Raspberry Pi Zero that counted each detection and sent the data over Wi-Fi

SKILLS

Technical: TypeScript, JavaScript, Python, NestJS, React, Next.js, Vite, MCP, Cognito, DynamoDB, Lambda, CloudWatch, ECS, PostgreSQL, MATLAB, Aspen, Inventor, AutoCAD, Fusion 360, Onshape, SolidWorks, Revit, KiCad
Languages: Elementary Spanish & Arabic
Interests: Ironman Triathlon, Marathon Running, Blues Guitar, Film Photography, Cooking, Philosophy, Snowboarding