

DOC	JD-HMT-B01
TYPE	Internship position description
TRACK	AI & Digital Health
LEVEL	Student / early career

AI & Computer Vision Intern, Facial and Skin Image Analysis

Image preprocessing, face region detection and segmentation, visual feature analysis, and technical feasibility testing for an early-stage skin analysis initiative

KEY TO TERMS USED

SEGMENTATION	Splitting an image into regions, for example separating cheek, forehead, and background.
LANDMARK	Reference points on a face, used to align images so that they can be compared.
BASELINE	The simple method a new method has to beat before it is worth anything.
FAILURE MODE	The specific condition under which a method stops working, such as poor lighting.
PREPROCESSING	Cleaning and standardizing images before any analysis runs.
REPRODUCIBLE	A pipeline another engineer can rerun from the repository and get the same result.

INTENDED ROLE

The initiative asks whether standardized facial images can be turned into structured, useful skin insights. Nobody has decided that it works. This role runs the experiments that answer it. You will build preprocessing pipelines, test detection and segmentation approaches, and report honestly on where they break. The emphasis is on rigorous, reproducible feasibility testing, not on shipping a finished model.

PRINCIPAL DUTIES

- Build reproducible preprocessing pipelines covering normalization, alignment, lighting correction, and quality gating.
- Test and compare open-source face detection, landmark, and region segmentation methods on sample images.
- Implement and evaluate candidate visual feature measures for skin characteristics such as texture, tone, and evenness of appearance.
- Design controlled experiments that isolate one variable at a time, and record settings so results can be reproduced.
- Quantify failure modes, including lighting, camera, angle, and skin tone effects, and report them without softening.
- Document every pipeline and experiment so another engineer can rerun it from the repository alone.
- Use approved AI coding tools to accelerate implementation, then verify behavior with unit tests and by inspecting outputs by hand.

EXAMPLE ASSIGNMENTS

Assignments depend on active studies, authorized data access, and the internship timeline. Examples may include:

- A preprocessing and quality-gate pipeline that standardizes incoming facial images
- A benchmark comparing detection and segmentation methods on accuracy, speed, and failure modes
- A feasibility report on whether a proposed visual feature can be measured reliably enough to be useful

YOUR FIRST TWO WEEKS

- Set up the environment and reproduce one published baseline on sample images.
- Build the preprocessing pipeline and run it over the first batch end to end.
- Benchmark two detection methods and record accuracy, speed, and where each fails.
- Write the experiment log format for the rest of the placement.

ABOUT HOPKINS MEDTECH

Hopkins MedTech Group LLC is a U.S. company working in medical technology and in vitro diagnostics. Its work covers clinical performance studies, protocol development and site coordination, data review and quality assurance, and regulatory support for United States and European pathways. The group is also exploring AI and digital health through an early-stage research initiative in facial and skin analysis.

REQUIRED QUALIFICATIONS

- Currently pursuing, or recently completed, a degree in computer science, electrical engineering, biomedical engineering, applied mathematics, or a related field, or able to show equivalent self-study or project work.
- Working Python skills and familiarity with at least one of NumPy, OpenCV, PyTorch, or TensorFlow from coursework or personal work.
- Understanding of basic image processing and evaluation concepts, including how to choose a metric and a baseline.
- The habit of reporting negative results clearly, since a well-documented failure is a valid and valuable outcome here.
- Careful handling of image data, including strict adherence to authorized datasets and storage locations.
- No prior machine learning, research lab, or professional internship experience is required.

PREFERRED QUALIFICATIONS

Not screening criteria. Coursework, labs, personal projects, and self-study all count as evidence.

- A course project or personal project involving image classification, detection, or segmentation
- Exposure to experiment tracking, version control, or containerized environments
- Awareness of fairness and bias issues in facial analysis, including performance differences across skin tones

WHAT YOU WILL GAIN

- Work on a genuinely open research question where the answer is not known in advance.
- Practice experimental discipline: baselines, controls, metrics chosen before results arrive.
- Learn how technical feasibility findings feed into product and regulatory thinking in health contexts.
- Leave with a documented benchmark and feasibility report that shows how you think, not just what you built.

DATA HANDLING, PRIVACY, AND RESPONSIBLE AI

Interns work only with data and documents they have been explicitly authorized to access. Patient-identifiable information, study data, client-confidential files, and proprietary materials must never be uploaded to public or unapproved AI services, shared outside the project team, or stored on personal accounts or devices. AI tools may be used only

DELIVERABLES

- A documented preprocessing pipeline that runs end to end from the repository
- A benchmark report comparing methods with metrics, settings, and failure analysis
- A written feasibility recommendation stating what is supported, what is not, and what to test next

SUPERVISION AND EVALUATION

Interns report to a named project lead, meet on a set weekly cadence, and receive written feedback on each deliverable. Work is evaluated on accuracy and traceability of sources, documentation quality, responsiveness to feedback, judgment about what to escalate, and disciplined use of approved AI tools. We expect steady learning and iteration rather than polished perfection on the first day.

WHAT WE DO NOT EXPECT

- Prior internship experience, or a name-brand employer on your CV.
- Knowing the regulations, tools, or vocabulary before you start; the terms box above is where most people begin.
- Certainty. Saying what the evidence does not support is treated as a strength, not a gap.

APPLICATION AND SELECTION

An application is a CV plus a short note naming the track you want and one project from this document you would like to work on, and why. First-round interviews are with the project lead who would supervise the work, not with a screening panel.

where the project lead has approved them for that task, and all AI-assisted work must be independently verified before it enters any deliverable. The intern and the project lead remain accountable for the final result.

Hopkins MedTech Group LLC provides equal internship and employment opportunities without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, disability, veteran status, or any other legally protected characteristic. Internships are educational in nature; interns do not provide medical advice, make regulatory determinations, or represent the company to any health authority, client, or study site. The AI and digital health initiative described here is early-stage research, not a cleared, approved, or clinically validated product. Assignments, data access, duration, and supervision are confirmed in the final project description.