2025-2026

PFE Edition

PFE BOOK

The Catalog of Excellence

eSteps Health: Engineering the Future of Human Mobility & Robotics

11 Critical Projects | Production Ready | Deep Tech Focus

Remote • Full-Time • PFE 2025-2026

Contents

Navigate Your Path to Excellence

11 Strategic Projects | **4** Technical Tracks | Production-Ready Deployment

Remote • Full-Time • PFE 2025-2026

Section 01

Introduction & Company Vision

Decoding Human Mobility Through Deep Technology

About eSteps

eSteps is a **deep-tech company revolutionizing how human movement is understood, analyzed, and optimized**. We decode mobility patterns for individuals with physical limitations and elite athletes alike, generating personalized digital biomarkers that define a data-driven path toward peak performance.

VISION: LIFELONG ELITE MOBILITY
Bridging the gap between injury recovery and high-performance aging

Core Technology Domains

- BIOENGINEERING
- IoT
- AI
- AUTOMATION

Our Culture: Relentless Pursuit of Excellence

We do not settle for average. We operate with an **athletic, high-performance mindset**. In healthcare and robotics, close enough is not enough.

> **The "Cleaner" Mentality:** We own problems. We fix them. We deliver.

Culture Pillars

01 The "Cleaner" Mentality
Own problems. Fix them. Deliver results without excuses.

02 Unwavering Determination
Resilience is our baseline. We persist through challenges.

03 Precision
In healthcare and robotics, close enough is not enough.

The Opportunity

This PFE Book outlines **11 strategic projects**. These are not "intern tasks."

- Critical components of our roadmap
- Deploy code to production
- Handle real cloud infrastructure
- Solve complex biomechanical problems

Section 02

Web & Software Engineering Track

Scalable Architectures • Real-Time Communication • Modern Stacks

4 Production-Grade Projects

From tele-rehabilitation platforms to automated food-tech backends

ES-WEB-01 | ES-CLOUD-02 | ES-WEB-03 | ES-BACK-04

NeuroGlove

ES-WEB-01 • Full-Stack Tele-Rehabilitation

Robotic glove hand rehabilitation platform requiring **React dashboard**, **Unity WebGL** serious games, and **WebSocket pipeline** for real-time hardware sync.

React.js | Python | WebSocket | Unity WebGL

OrthoScan

ES-CLOUD-02 & ES-WEB-03 • API-First & 3D Frontend

Modernizing posture analysis with **Laravel RESTful API**, **Azure cloud**, **Docker**, and **Three.js 3D viewer** for medical scans.

Laravel | Azure | Docker | Three.js

SmartFood Robotics

ES-BACK-04 • Intelligent Backend & Logistics

Automated food-tech backend orchestrating **PLC integration**, **order queue algorithms**, and **SCADA systems** for zero lost orders.

Laravel | Siemens S7 | SQL Polling | State Machines

Core Competencies

Scalable Architectures

Microservices, containerization, cloud-native design

Real-Time Communication

WebSocket pipelines, low-latency data sync

Modern Tech Stacks

React, Laravel, Python, Three.js, Unity

Production Deployment

Azure, Docker, CI/CD, automated testing

</> Ready to Deploy Production Code?

4 Projects • React • Laravel • Azure • Python

Project 01 · ES-WEB-01

NeuroGlove – Full-Stack Tele-Rehabilitation Platform

React • WebSocket • Python • Unity WebGL • Robotic Glove Integration

Project Context

The NeuroGlove project centers on a **robotic glove for hand rehabilitation**. The system requires a robust interface to bridge physical hardware with a virtual training environment, enabling therapists to guide patient recovery through data-driven, gamified therapy sessions.

Key Challenge: Real-time synchronization between browser, Python server, and robotic glove hardware with minimal latency.

Core Objectives

React Dashboard

Develop React-based dashboard (MVC) for therapists to manage patient sessions and visualize ROM data.

Unity Integration

Integrate Unity WebGL to render serious games directly in browser.

WebSocket Pipeline

Implement low-latency WebSocket for commands between browser, Python server, and robotic glove.

Expected Outcome

A **fully functional, responsive web interface** allowing therapists to trigger robotic assistance and view patient bio-data in real-time. The platform will bridge cutting-edge robotics with intuitive clinical workflows, directly impacting patient recovery outcomes.

Technical Stack

Frontend

React.js | SCSS | Figma

Integration

Unity WebGL | Socket.io

Backend

Python | JSON

Required Profile

- Full-Stack Developer
- React / WebSocket / Python
- Real-time systems experience
- MVC architecture knowledge

Impact Level

Direct Patient Care

Real therapy outcomes

Project 02 & 03 · ES-CLOUD-02 & ES-WEB-03

OrthoScan

API-First Cloud Architecture & 3D Interactive Frontend

API-First Cloud Architecture

ES-CLOUD-02 • Backend & Cloud Engineer

Migrating posture analysis from legacy monolith to **modern headless architecture**. Design RESTful API, migrate 3D reconstruction to Azure, implement authentication and documentation.

Objectives

- Laravel RESTful API decoupling frontend/backend
- Azure Cloud with Docker containerization
- Secure auth (Sanctum/Passport) & Swagger docs

Laravel | Azure | Docker | PHP 8.2

3D Interactive Frontend

ES-WEB-03 • Frontend Engineer

Advanced browser-based tool to display **3D patient scans (OBJ/STL)** with rotation, zooming, and landmark annotation for medical protocols.

Objectives

- React frontend consuming BeyondShape APIs
- Three.js for high-performance OBJ/STL rendering
- Protocols: "Scoliosi" & "Osteochondrosis"

React | Three.js | TailwindCSS | Figma

Context & Challenge

Migrating legacy **Scoliosis and Osteochondrosis protocols** to modern architecture while maintaining medical-grade precision.

Expected Outcomes

API: Scalable, documented API for 3D scan uploads/processing

Frontend: Browser-based 3D viewer with no performance lag

Required Profiles

ES-CLOUD-02: Backend & Cloud Engineer

ES-WEB-03: Frontend Engineer

System Architecture Flow

Project 04 · ES-BACK-04

SmartFood Robotics – Intelligent Backend & Logistics

Laravel • Industrial IoT • PLC • SCADA • Order Orchestration

Project Context

SmartFood Robotics is an **automated food-tech line**. The backend must orchestrate complex logic between user orders, industrial PLC (Siemens S7-1500), and kitchen management systems, serving as the **central "brain"** for the entire robotic line.

Key Challenge: Zero lost orders and real-time synchronization with industrial machinery in a high-volume food production environment.

Core Objectives

Order Queue Algorithm
Logic to prioritize orders, manage remaking defective pizzas, and schedule production slots.

PLC/SCADA Integration
Polling layer to track pizza position on conveyor via SQL or API.

HMI Back Office
Dashboard for stock, oven temps, and alarm logs.

Expected Outcome

A **central "brain"** ensuring **zero lost orders** and **real-time sync with industrial machinery**, optimizing automated food production.

Technical Stack

Backend

Laravel | MySQL

Protocols

SQL Polling | REST | MQTT

Industrial Systems

Siemens S7-1500 | SCADA

Required Profile

- Backend Engineer
- Laravel / Industrial IoT
- Scheduling algorithms
- State machine design

Impact Level

Industrial Automation
Zero lost orders

Section 03

Mobile Development Track

UX/UI Excellence • Native Performance • Hardware Integration

2 Cross-Platform Projects

From patient companion apps to kiosk ordering systems

ES-MOB-05 | ES-MOB-06

NeuroCompanion – Patient App

ES-MOB-05 • Patient Companion App

Mobile companion for patients using the **NeuroGlove** system to **track recovery progress**, view therapy data, and access medical reports at home.

Core Features

- Cross-platform app (iOS/Android) with React Native
- Therapy session visualization (scores, minutes)
- Secure patient login and 3D scan access

React Native | REST API | Charts

SmartFood Robotics – Kiosk & App

ES-MOB-06 • Kiosk & Customer App

Customer-facing Flutter app for **physical Totems (Kiosks)** and mobile ordering with payment integration and dynamic pizza builder.

Core Features

- Deploy on Windows (Totems) & Mobile (iOS/Android)
- Payment Gateway SDKs (POS/NEXI) integration
- "Kiosk Mode" security and real-time visualization

Flutter | Dart | POS/NEXI

Track Focus

UX/UI Excellence

Medical & consumer-grade interfaces

Native Performance

Cross-platform with native capabilities

Hardware Integration

Payment terminals & kiosk security

NeuroCompanion: Patient Engagement

Enable patients to **stay engaged with rehabilitation** outside the clinic, improving therapy adherence through accessible data visualization.

SmartFood Robotics: Seamless Ordering

Handle **secure payments and structured data** transmission to the backend for automated pizza production.

Section 04

Deep Tech: Data Science & Digital Twins

AI • Biomechanics • Simulation • R&D Excellence

AI-Driven Digital Biomarkers

ES-DATA-07 • Data Scientist / AI Engineer

Convert raw IMU and 3D scan data into **actionable clinical insights** using machine learning for gait analysis and rehabilitation.

Objectives

- Detect gait anomalies & predict fall risks
- Classify movement quality
- Build data cleaning pipelines for noise/drift

Python | PyTorch | Time-Series

Digital Twins & Simulation

ES-SIM-08 • Simulation Engineer / R&D

Build a **"Digital Twin"** of the human patient a virtual replica to simulate joint recovery and optimize therapy.

Objectives

- Create virtual musculoskeletal models from patient data
- Simulate robotic assistance effects on joint recovery
- Visualize with Unity/OpenSim integration

Unity 3D | Python | OpenSim

AI Objectives

Anomaly Detection

ML models to detect gait patterns

Movement Classification

Quality scoring for rehabilitation

Real-Time API

Live movement quality scoring

Simulation Objectives

Musculoskeletal Models

Virtual replicas from patient data

Recovery Simulation

Robotic assistance impact modeling

Therapy Prediction

Outcome prediction before assignment

Required Profiles

ES-DATA-07

Data Scientist / AI Engineer

ES-SIM-08

Simulation Engineer / R&D

Deep Tech Pipeline

Raw Data → IMU & 3D Scans

→ **AI Processing** → ML Models

→ **Digital Twin** → Simulation

→ **Clinical Insights** → Predictions

References: ES-DATA-07, ES-SIM-08

Section 05

Operations & Business Track

Automation • Growth • Strategy • Market Expansion

2 Strategic Projects

Bridging technology and business for operational excellence

ES-OPS-09 | ES-BIZ-10

Internal Automation & AI Ops

ES-OPS-09 • Automation Engineer

Design **automated workflows** using n8n to connect CRM, Project Management, and Engineering tools. Integrate LLMs to summarize logs and emails.

Core Objectives

- Automate ticket creation and lead processing
- Integrate OpenAI API for log/email summarization
- Build internal reporting dashboards

n8n | Python | OpenAI API

Business Development Rep

ES-BIZ-10 • Business / Industrial Engineering

Support eSteps' expansion into **EU and MENA markets** through market analysis, sales pipeline management, and partnership development.

Core Objectives

- Analyze market fit for new BodyScan protocols
- Manage sales pipeline and clinic partnerships
- Assist in Go-To-Market strategy execution

Market Analysis | Sales | GTM

Track Focus

Operational Automation

Low-code workflows, AI integration

Growth Strategy

Market expansion, partnerships

Business-Tech Bridge

Linking engineering and business

Automation Impact

Dramatically **reduce manual overhead** in a startup requiring efficient, streamlined operations through intelligent automation.

Business Expansion

Directly impact **market presence in EU/MENA** by establishing key partnerships and executing go-to-market strategies.

Operations & Business Flow

Section 06

Application Process

Join the Deep-Tech Revolution • Remote • Full-Time • PFE 2025-2026

Who We Are Looking For

We are searching for **PFE students who are autonomous, technically curious, and ready to work in a "Relentless" environment**. You will not be fetching coffee you will be deploying production code, handling real cloud infrastructure, and solving complex biomechanical problems.

- Autonomous & self-driven
- Technically curious
- Ready for challenges
- Production-ready skills
- Problem-solving mindset
- Team collaboration
- Adaptability
- Passion for impact

What You Will Get

Real Impact
Production deployment

Deep Tech
Cutting-edge tech

Mentorship
Expert guidance

Portfolio
Career acceleration

How to Apply

Required Documents

- CV (PDF format)
- Portfolio (GitHub/Behance)

Email Addresses

kd@estepshealth.com

talent@estepshealth.com

Subject Line Format

Candidature PFE 2025 - [Reference Code] - [Your Name]

Location & Duration

- **Location:** Remote
- **Duration:** 2-4 months
- **Type:** Full-Time

Pro Tip for Applicants

Mention the specific Reference Code of the project you're interested in. Generic applications will not be considered. Show us you've read this book and understand what we do.

eSteps
PFE 2025-2026

Engineer Your Future

This is not an internship. This is your opportunity to work at the intersection of bioengineering, AI, and robotics, deploying production-grade solutions that impact real lives.

11	4	100%	∞
Critical Projects	Technical Tracks	Production Ready	Impact Potential

Ready to Apply?
Send CV, Portfolio, and Reference Code

kd@estepshealth.com
talent@estepshealth.com

Remote | PFE 2025-2026 | Full-Time

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