ExypnoTech

The Future of Nature

PFE BOOK 2026

ExypnoTech Engineering Services

ExyNoTech
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THE CONTENT

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Who we are

ExypnoTech is an innovative and dynamic startup on a mission to revolutionize the aquaculture industry through cutting-edge technology solutions. With a strong commitment to sustainable growth, increased productivity, and unwavering environmental stewardship, we are reshaping the future of fish farming. Our primary objective is clear: we aim to seamlessly integrate innovative technologies like artificial intelligence, machine learning, internet of things, and data analytics into aquaculture practices, transforming the way fish farming operates. By harnessing the power of technology, we empower fish farmers worldwide to optimize efficiency, enhance feed management, monitor water quality, and proactively detect diseases at an early stage.

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Our values

Innovation

Continuously driving the integration of cutting-edge technologies to revolutionize fish farming

Sustainability

Prioritizing eco-friendly practices for sustainable aquaculture.

Transparency

Building trust through open communication and accountability.

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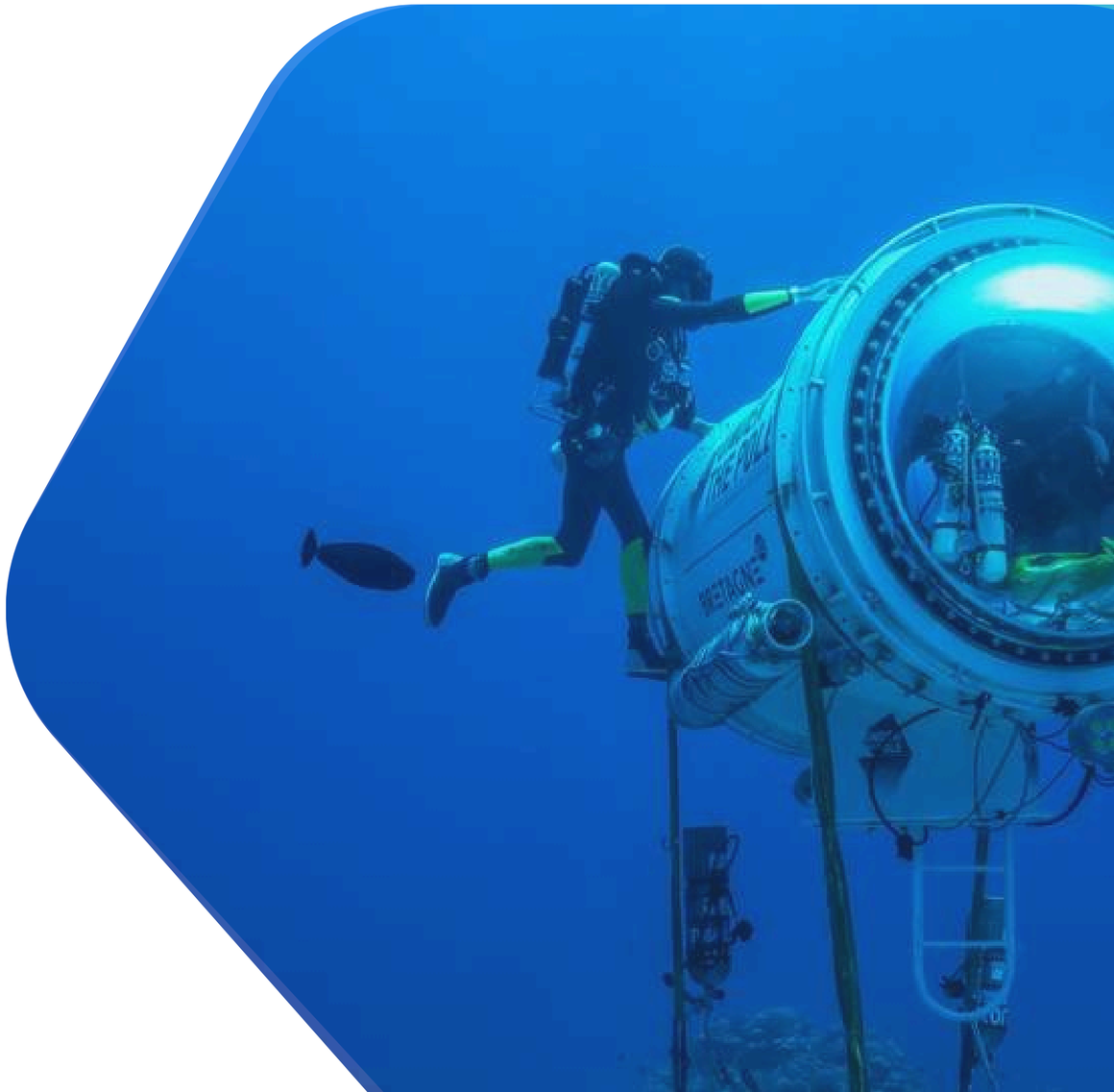
Our missions

01 Provide advanced solutions that help farmers streamline production and make data-driven decisions.

02 Promote environmentally harmonious practices through precise insights and innovative technologies.

03 Collaborate with industry experts to continuously refine our technologies and shape a sustainable future for aquaculture.



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Project EXY_01

Development of a web platform for the acquisition, management and real-time monitoring of IoT data for aquaculture farms.

Develop a complete web platform that enables real-time acquisition of IoT data (sensors and cameras), structured storage and data management, interactive dashboard visualization, and real-time video streaming using WebRTC. The platform will also include aquaculture farm management features (cages, populations, parameters, interventions) and a simple alerts and notifications system.

Required skills:

- Python
- Django / Django REST Framework
- React.js
- WebRTC
- API REST, WebSockets.
- MongoDB

Intern Responsibilities:

- **Develop a backend using Django / Django REST**
- **Design API endpoints for receiving IoT data**
- **Implement real-time video streaming using WebRTC**
- **Build a modern React frontend with interactive dashboards (charts, history, insights)**
- **Integrate existing AI models**
- **Set up authentication and user management**
- **Structure and manage the database**
- **Conduct load testing and optimize system performance**
- **Document the entire solution and prepare a functional demo**

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Project EXY_02

Real-Time Fish Behavior Analysis & Stress Detection Using Deep Learning and Underwater 3D Vision

Develop an intelligent system for real-time analysis of fish behavior using underwater 2D/3D vision; detect and track fish movements; extract key behavioral indicators such as speed, agitation, grouping, and vertical position; compute a Stress Score reflecting fish welfare; integrate Deep Learning, multi-object tracking, and depth processing into a unified pipeline; display stress levels, heatmaps, and abnormal behavior alerts through a real-time dashboard; and validate the system using video data from offshore cages and RAS tanks.

Required skills:

- Computer Vision & Deep Learning fundamentals
- Python
- OpenCV and PyTorch/TensorFlow
- Object detection using models such as YOLOv8 / YOLOv11
- StrongSORT, DeepSORT, ByteTrack
- Machine learning basics

Intern Responsibilities:

- Set up underwater video acquisition
- Collect and annotate behavior datasets
- Implement the detection + tracking pipeline for real-time monitoring
- Extract behavioral features
- Develop a Stress Score model
- Generate movement heatmaps and behavioral statistics
- Build a real-time dashboard
- Validate the system in real and experimental aquaculture conditions
- Prepare documentation, experiment reports, and technical presentations

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Project EXY_03

Implementation of a complete DevOps architecture for the deployment, monitoring, and automation of the EyeFish platform.

The project involves establishing EyeFish's DevOps and MLOps infrastructure, including automated CI/CD pipelines for backend, frontend, and AI microservices, containerization and orchestration with Docker and Kubernetes, and deployment on AWS. It also includes monitoring and alerting with Prometheus, Grafana, and centralized logs, as well as MLOps workflows for model deployment, continuous training, and inference pipeline optimization, all supported by standardized documentation and internal operational workflows.

Required skills:

- Docker, Docker Compose
- CI/CD (GitHub Actions / GitLab CI)
- AWS (EC2, S3, IAM, CloudWatch, ECS/EKS)
- Linux / Bash scripting
- Basics of Kubernetes

Intern Responsibilities:

- **Design the complete DevOps architecture**
- **Create CI/CD pipelines for backend, frontend, and AI services**
- **Automate deployment on AWS**
- **Implement real-time infrastructure monitoring**
- **Optimize performance and reduce cloud costs**
- **Test deployment in the EyeFish environment**
- **Prepare technical documentation and the final demonstration**

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Project EXY_04

Design and development of an electronic board for data acquisition, processing, and transmission in an IoT system for marine environments.

Design an electronic board tailored to the EyeFish system, including multi-sensor data acquisition, embedded digital filtering and processing, communication with the cloud, energy management and electrical robustness, and reliability in marine conditions, followed by prototyping and environmental testing.

Required skills:

- Analog & digital electronics
- PCB design using Altium
- STM32 microcontrollers
- Protocols: UART, I2C, SPI, RS485
- Basic signal processing
- Embedded programming (C/C++ / MicroPython)
- IoT fundamentals

Intern Responsibilities:

- **Define the electronic architecture of the board**
- **Select microcontrollers**
- **Design the electronic schematic**
- **Develop the PCB**
- **Integrate analog acquisition circuits**
- **Implement the firmware:**
- **Test compatibility with the EyeFish**
- **Multi test performing**
- **Document schematic, PCB, firmware, and test procedures**
- **Present a functional prototype**

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Project EXY_05

Design, development, and mechanical simulation of a connected buoy for AIoT applications in a marine environment

Design an intelligent buoy featuring a robust mechanical structure resistant to waves, wind, and corrosion; a modular architecture for easy installation and maintenance; optimal stability for cameras, sensors, and antennas; waterproof compartments for electronics and batteries; an integration system for solar panels; mechanical and hydrodynamic simulations to validate the design; and preparation for prototyping and manufacturing.

Required skills:

- SolidWorks
- Mechanical simulation: FEM / static / dynamic analysis
- Materials: technical plastics, composites,
- Basics of hydrodynamics and buoyancy
- Understanding of marine environments and marine-grade

Intern Responsibilities:

- **Analyze the existing EyeFish platform**
- **Create a complete CAD design**
- **Propose an anti-corrosion design, compliant with IP67/IP68**
- **Study buoyancy, stability, and mass distribution**
- **Optimize the design for vibrations and movement**
- **Prepare manufacturing plans and a BOM**
- **Assist in preparing a physical prototype**

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Project EXY_06

Qualification of a marine AIoT product and preparation of the documentation for obtaining CE marking.

Implement the overall product qualification process for CE marking, including identification of applicable directives and standards, risk analysis according to ISO 12100, planning and execution of required tests, preparation of the CE technical file, and coordination with certification laboratories.

Required skills:

- Knowledge in electronics and IoT
- Basics of industrial regulations
- Risk analysis methodologies
- Strong documentation skills
- Ability to communicate effectively with external laboratories

Intern Responsibilities:

- **Analyze the EyeFish product across all dimensions: electronics, mechanics, software, and IoT**
- **Identify relevant standards and regulatory directives**
- **Conduct a complete risk analysis (ISO 12100)**
- **Develop a comprehensive test plan**
- **Prepare prototypes for testing**
- **Coordinate with certified laboratories**
- **Prepare the CE technical files**
- **Draft the CE declaration of conformity**
- **Participate in design improvements in case of non-compliance**

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Project EXY_07

Business development and deployment strategy for an AIoT solution in aquaculture.

Analyze the offshore aquaculture and RAS market, identify potential clients (fish farms, industrial partners, distributors), develop the commercial and marketing strategy for EyeFish, structure the sales and client follow-up process, and contribute to the preparation of sales materials such as presentations, brochures, and product demonstrations.

Required skills:

- Knowledge in Business Development, Sales, and Marketing
- Analytical mindset with ability to study market and competition
- Strong written and verbal communication skills
- Proficiency in MS Office and CRM tools
- Curiosity and autonomy

Intern Responsibilities:

- **Study the local and international aquaculture market**
- **Identify business opportunities and potential prospects**
- **Create a customer/lead database**
- **Assist in defining pricing, offers, and subscription models**
- **Develop tracking and reporting tools (CRM, Excel, dashboards)**
- **Contribute to client presentations and pitch decks**
- **Monitor and analyze the results of commercial efforts**
- **Provide recommendations to optimize growth**

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How to submit

Read and Choose a Project

Review the available projects and select the one that aligns with your skills and interests. Ensure you meet the required skills for the chosen project.

Fill Out the Form

Complete the application form with your personal details, qualifications, and project preference.

Interview

If shortlisted, you will be invited to an online interview where we will discuss your qualifications and project fit.

Join Us

Upon a successful interview, you will be welcomed to the team and begin your journey with the project.

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Contact us

E-mail

contact@exypnotech-es.com

Social media

@exypnotech

Phone

+216 51 503 776