



Aqua Vision

Integration of IoT Technology with AI in Egypt's
Aquaculture Industry

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01.

INTRODUCTION

01. INTRODUCTION

- Growing sector vital to Egypt's economy and food security^[1]



75% of Egypt's total fish production

- Issues: manual monitoring, high mortality, inefficient resource use^[2]



30% fish mortality rates

- Aqua Vision: smart IoT and AI-based aquaculture optimization system



02.

Problem Definition

02.Problem Definition



Manual Monitoring

Time-consuming,
prone to human
error



No Real-Time Adaptation

Delayed response
causes fish stress and
mortality



Fixed Threshold

Inefficient across
seasons and fish
growth stages



03.

Methodology

Methodology



- Sensor's Data



- Components



- Algorithm



- AI Module



04.

Implementation

Implementation



Hardware

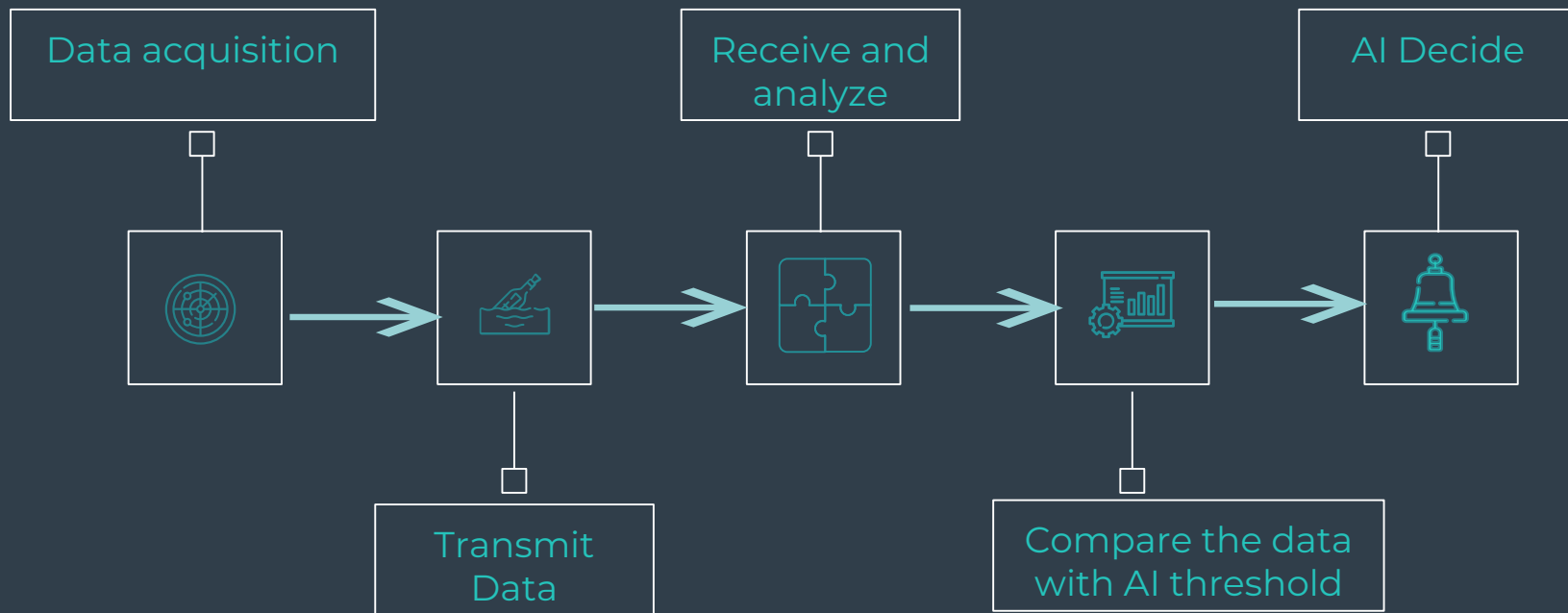
2 ESP 32 microcontroller for
Transmit and receive
Ph, Temperature, DO, Water
level sensors



Software

Data acquisition via sensors
then analysis for taking
decision

Algorithm





5

Experimental Results

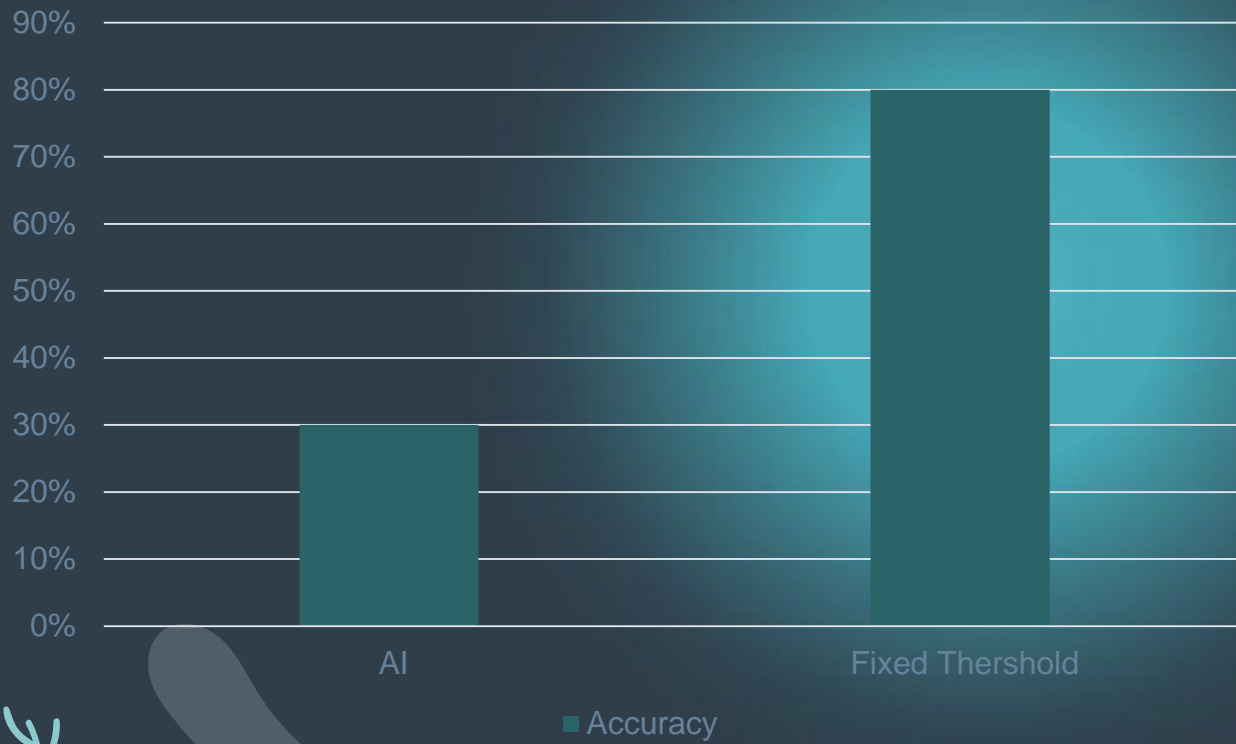
Testing Prototype

A demo video for the
Prototype



Key Results

Accurate Detection

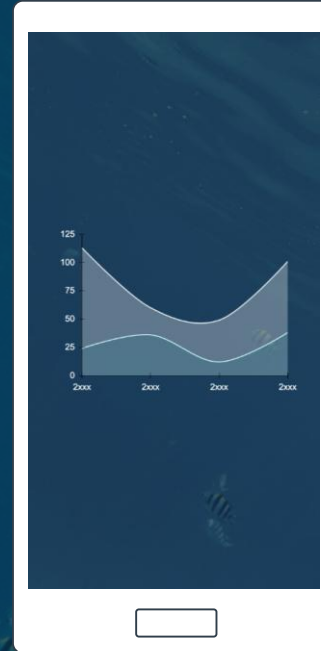




Conclusion and Future Work

Conclusion

- IoT and AI integration boosts smart aquaculture
- Enhances monitoring, cost efficiency, sustainability



Future Work

Cloud and mobile remote management

Expand AI training with field data

Deploy on real Egyptian fish farms



BUSINESS MODEL CANVAS



DESIGNED BY :

Yousef Khaled

Key Partners



- **Component Suppliers:** Providers of Tech comp.
- **Manufacturers:** Companies handling device production
- **Technology Partners:** AI and software developers.
- **Local Aquaculture Associations:** For market access and partnerships.
- **Distribution Channels:** Logistics and shipping companies.

Key Activities



- **Product Development:** Designing the base device.
- **Manufacturing:** Producing devices.
- **Marketing & Sales:** Digital marketing, trade shows, and partnerships.

Key Resources



- **Human Resources:** marketing team, and customer support.
- **Financial Resources:** Initial investment and funding.
- **Intellectual Property:** Patents and proprietary technology.
- **Operational Infrastructure:** Facilities for product development and support.

Value Propositions



- **Real-Time Monitoring:** Continuous data collection and analysis for improved water quality management.
- **Advanced Features:** AI-based analytics, real-time alerts, and actionable insights.
- **Scalability:** Easily scalable solution for various farm sizes.
- **Cost-Effectiveness:** Competitive pricing with flexible subscription plans.
- **Low Maintenance:** Minimal upkeep compared to manual and laboratory methods.

Customer Relationship



- **Education & Training:** Offering training, and user education.
- **Customer Feedback:** Collecting feedback to improve the product.
- **Community Engagement:** Building relationships through local aquaculture associations and events.

Channel



- **Online Marketplaces:** Amazon, eBay, and industry-specific platforms.
- **Direct Sales:** Website and sales team.
- **Trade Shows & Industry Events:** Exhibiting to showcase products.

Customer Segments



- **Small to Mid-Sized Aquaculture Farms:** Primary target market.
- **Large Aquaculture Operations:** Potential future expansion.
- **Research Institutions:** For data analysis and collaboration.
- **Local Farmers and Cooperatives:** For regional market penetration.

Cost Structure



- **Product Development Costs:** R&D, prototyping, and technology integration.
- **Manufacturing Costs:** Production and assembly.
- **Marketing & Sales Costs:** Advertising, trade shows, and promotions.
- **Operational Costs:** Salaries, office rent, and logistics.
- **Customer Support Costs:** Tools, training, and support staff.

Revenue Stream



- **Base Device Sales:** \$30 per unit.
- **Subscription Plans:** \$3/month (Basic), \$10/month (Advanced), \$25/month (Premium).
- **Installation & Training Fees:** \$10 per site visit.
- **Support Plans:** \$5/month (Standard), \$20/month (Premium).

THANKS!

Do you have any
questions?

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