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

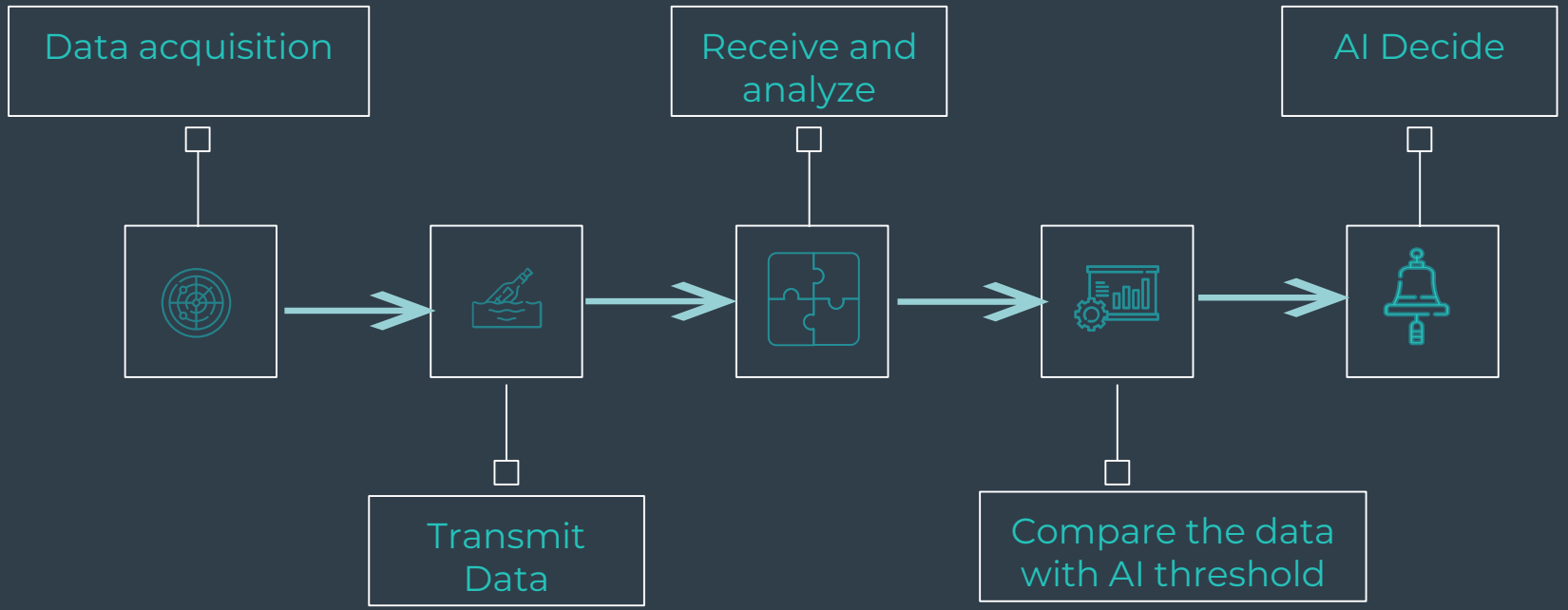
Hardware

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

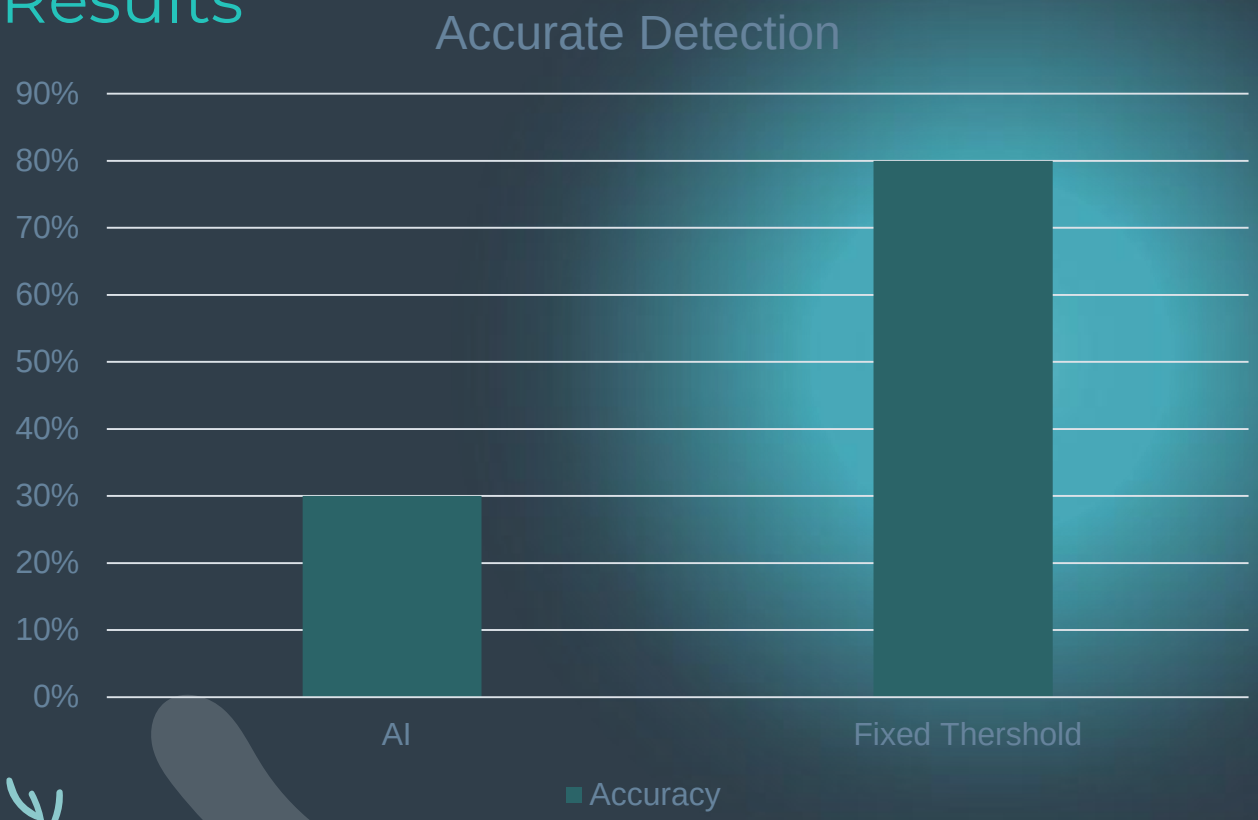

Data acquisition
Receive and analyze
AI Decide
Transmit Data
Compare the data with AI threshold

5 Experimental Results

Testing Prototype

A demo video for the Prototype

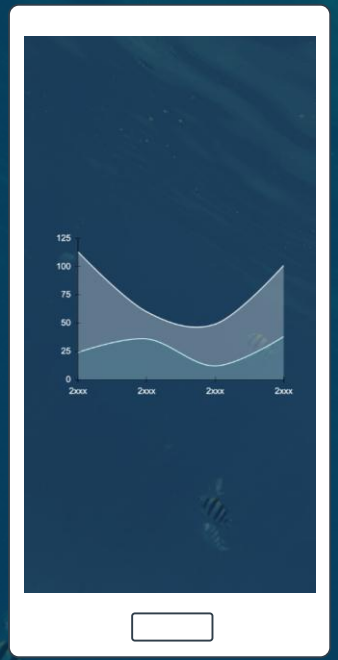
Key Results


Accurate Detection
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
AI
Fixed Thershold
Accuracy

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

AquaVision

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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