People-Centric AI Solutions for University Dining: Empowering Staff and Enhancing Efficiency

Dr. Fengmin Gong

Co-Founder & CEO

Metafoodx

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Journey for Impact

China
-1977
Destiny – "Earth repair"

China
1978–85
China reform –
1% entering college by exam

St, Louis
1985–92
Journey West for Ph.D at WashU

RTP
1992-2000
Building info superhighway & DARPA research

NC2CA
2000 - 21
Entrepreneurship – Academic to practical innovations

San Jose
2001-21
4 Startups
IntruVert Networks/ Palo Alto Networks/ Cyphort/ AssureSec

San Jose
2021–
Bigger impact –
Foodservice healthy delicious-ness with sustainable margins!

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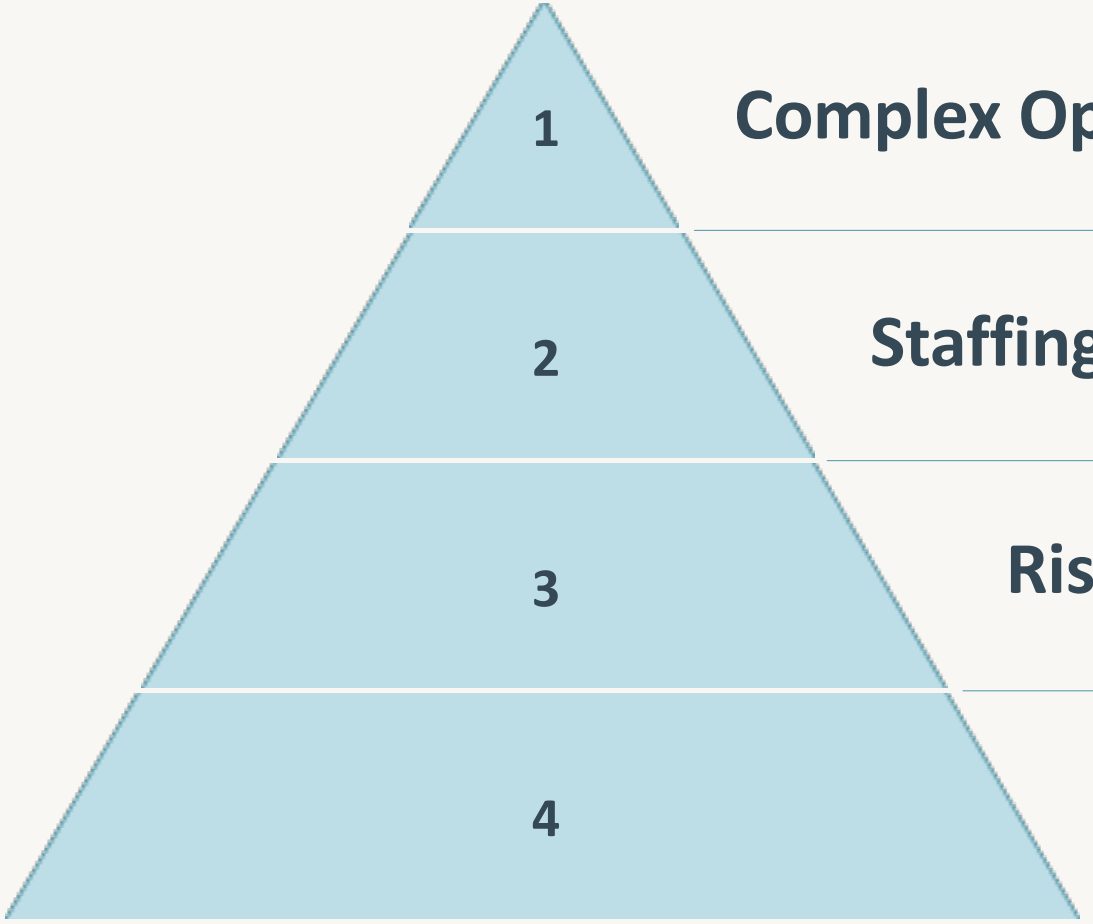
The Kitchen Challenge



Complex Operations with Tight Margins

Staffing Shortages Disrupt Workflow

Rising Student Demands for Quality

Tech Tools Lack Usability

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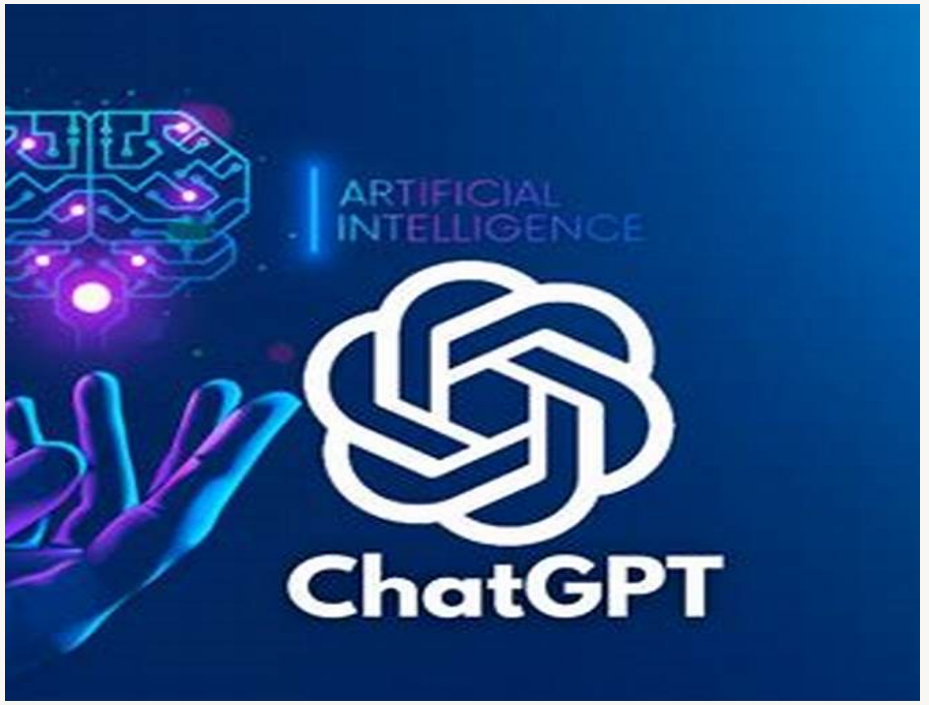
Can We Tap into the Mighty AI?



ChatGPT's shocked the masses with its human-like capability to carry on a written dialog

New foundational models perform brilliantly with understanding, writing, image & video gen, coding, and agentic task automation

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When AI Fails, Consequences Occur

- **AI Hallucinations from Language : AI systems generate plausible but incorrect outputs due to ambiguous language and lack of genuine understanding.**
- **Lack of True Understanding : Large Language Models predict word sequences without comprehending context, causing errors in critical settings.**
- **Chatbot Memory Resets : Memory resets erase prior conversations, disrupting continuity and frustrating users during interactions.**
- **Ungrounded AI Frustrates Users : AI lacking real-world grounding produces irrelevant outputs, reducing trust and usefulness in key domains.**

DOES AI HAVE A SOUL?

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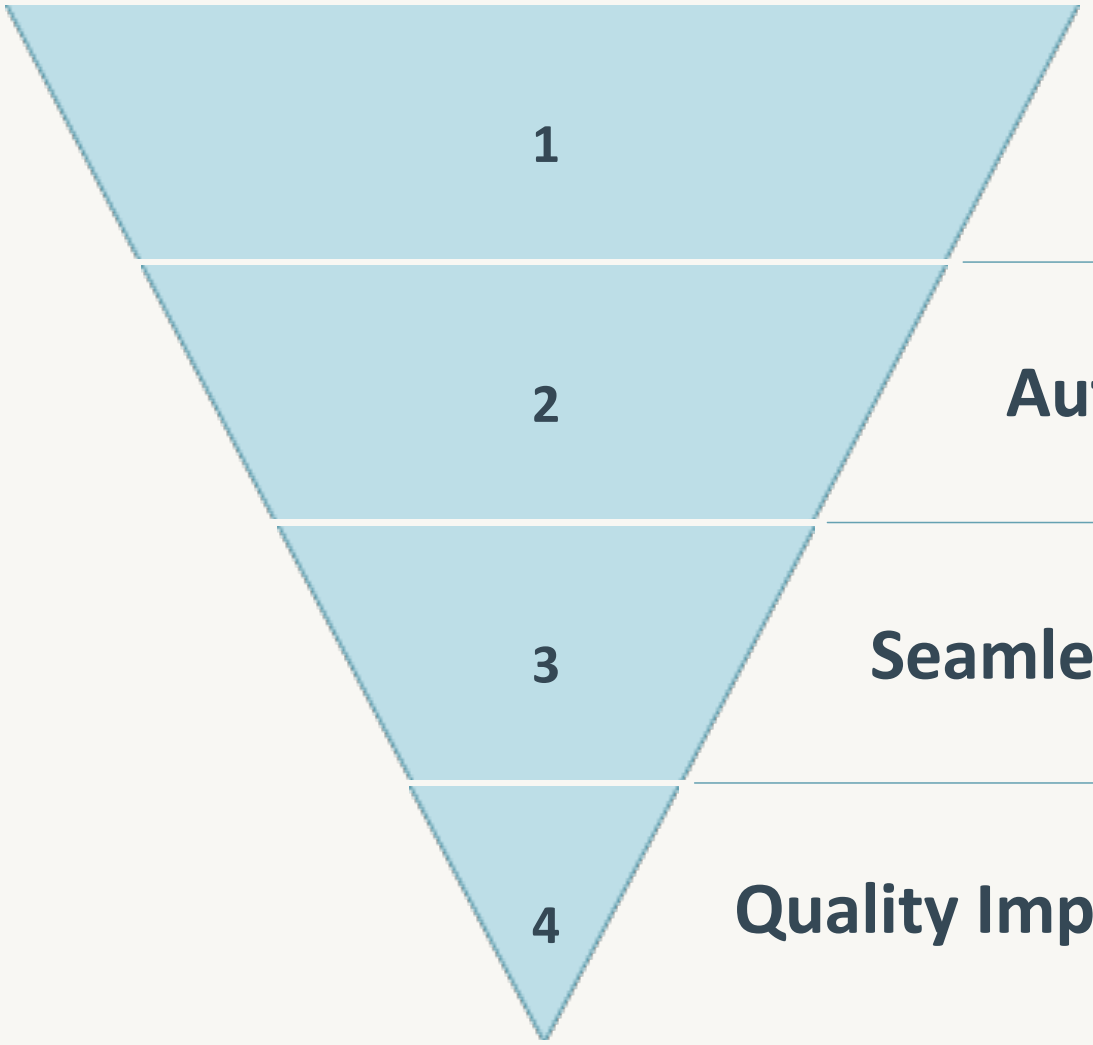
AI That Helps Food Ops



1. Real-time Data Utilization
2. Automation of Routine Tasks
3. Seamless Integration
4. Quality Improvement and Waste Reduction

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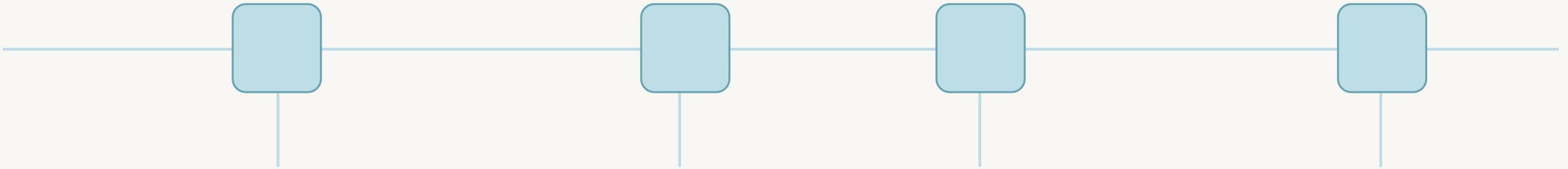
Principle - People First, Always



AI Designed to Serve People

WHAT

Human-Centric AI Integration

ACCESS & CONTROL

Powerful Yet Practical Solutions

IMPACT

Focus on Machine Intelligence

INTENT

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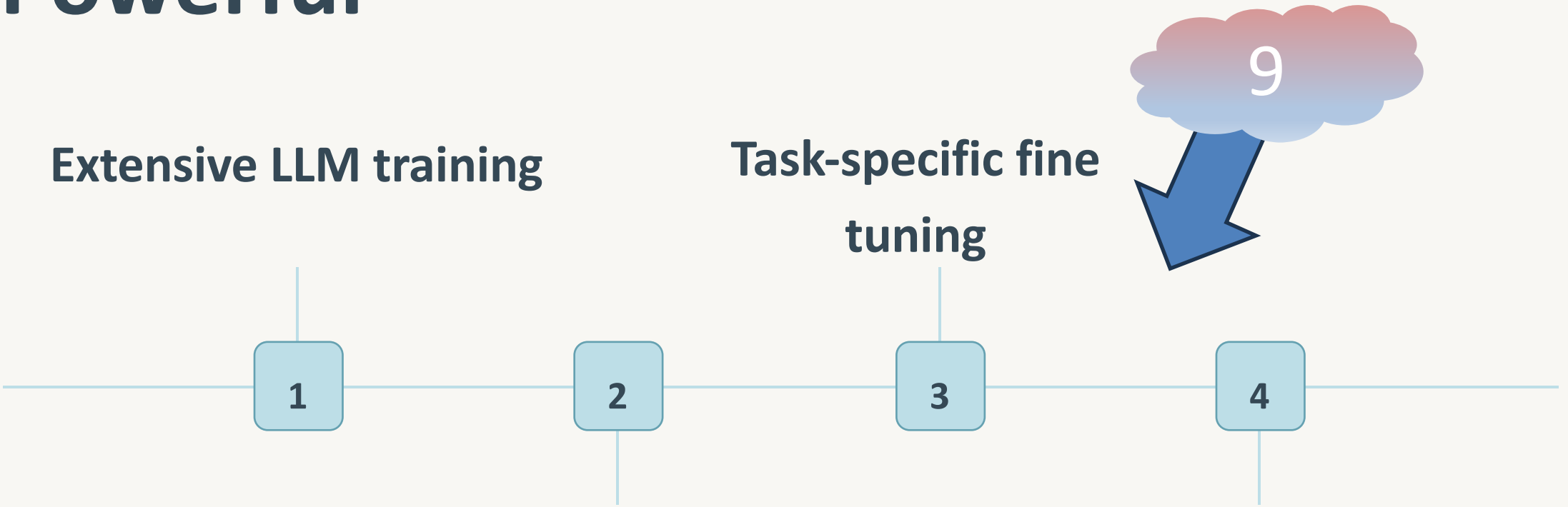
Foundational Models: Versatile and Powerful



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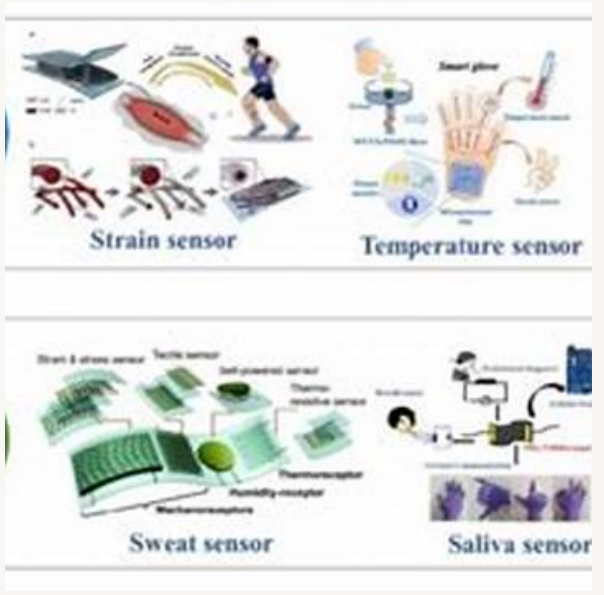
Kitchen AI Needs Real-Time & Physical Intelligence – Food Is Real

Tailored for Kitchen Environments

Interaction with Food, Equipment, and Operators



Integration with Physical Sensors

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Digitizing the Food Lifecycle Practically

Core Producer & Consumer Relationship

Data-Driven Decision Making

Produce What Delights the Consumers

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Metafoodx Metron AI Platform

1

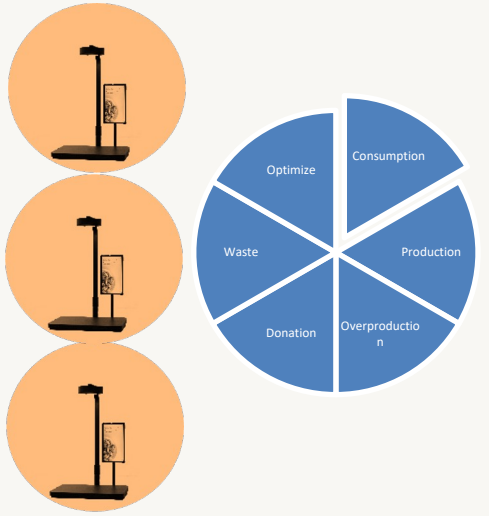
Seamless Integration

Metron AI Platform offers simple and smart integration tailored for university dining kitchens.

2

Automatic Food Recognition

The AI scanner identifies food items instantly without any image pre-training or manual setup.



3

Continuous Monitoring

24/7 tracking by weight & temperature, and images provide detailed data aligned with menu specifics.

4

Enhanced Operational Efficiency

Real-time insights from dashboard, support menu optimization and improve food quality while reducing waste.

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Power of Agentic AI?

Autonomous Actions

Agentic AI autonomously assists kitchen staff to enhance efficiency.

1

2

Weight Sensing & Item Recognition

Continuously monitors weight to automatically identify food items.

Real-Time Safety Monitoring

Provides alerts for food temp ensuring safety.

3

4

Consumption vs. Leftover Calculation

Calculates per menu consumption by tracking service & return.

Menu Cycle Forecasting

Uses menu cycles to automatically predict future consumption.

5

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Big Deal of Zero Image Pre-Training?

Making Food Tracking Practical

Individual menu item tracking is required for accurate consumption forecasting, but operators lack the tools to do it!

- Tens of thousand of perfect image per menu item are impossible to get!
- Probe+pencil+binder for temperature logging does not spell consistency or perfection!
- Counting serving pans puts staff to sleep before reaching accurate consumption data!

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Real Results from Customers

- Reduce overproduction waste by up to 50% within weeks, lowering costs and environmental impact
- 'Scan and Forget' system enabled staff to rely on automatic scanning without manual effort
- Operations achieved double or triple savings by investing the cost of 1/2 pound of chicken per meal period

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Solid Savings Data

Case Study 1

Tracking Main Line + Salad Bar at 1 campus dining location. 2 Devices.

Week	Consumption	Leftover
Month 1	12097.1 lb	2216.7 lb
Month 2	12479.6 lb	1720.6 lb
Month 3	12029.7 lb	1682.5 lb
Month 4	10170.3 lb	929.6 lb
Month 5	10695.6 lb	1082.1 lb

- **52% Leftover Reduction**
- **Save $17260 in 5 month**

Case Study 2

Campus Market serving grab-and-go customers with a 3-week cycle, tracking consumption and leftover.

Week	Consumption	Leftover
Cycle 1	20381 lb	1355.15 lb
Cycle 2	18030 lb	1148.26 lb
Cycle 3	19127 lb	1010.28 lb
Cycle 4	18520 lb	820.5 lb

- **40% Leftover Reduction**
- **Save $5430 in 3 month**

Case Study 3

Athletes Dining tracking leftover only.

"The cost trends show the savings pretty clearly." - Kitchen Manager

Week	Leftover
Month 1	4772.6 lb
Month 2	1987.1 lb
Month 3	1371.4 lb
Month 4	1209.3 lb

- **74% Leftover Reduction**
- **Save $48750 in 4 month**

Carbon Reduction Impact From Reduced Food Waste

243,074
Total # of food pans scanned

1,740,707
Total food serVings tracked

194,582 lbs
Total leftovor

90% Reductions Achieved

175,124 lbs
of food waste avoided (over 9 months)

577,909 lbs
of CO_2 avoided

57 cars taken off the road for a year

4.38 million gallons of water saved

275,195 lbs of coal not burned

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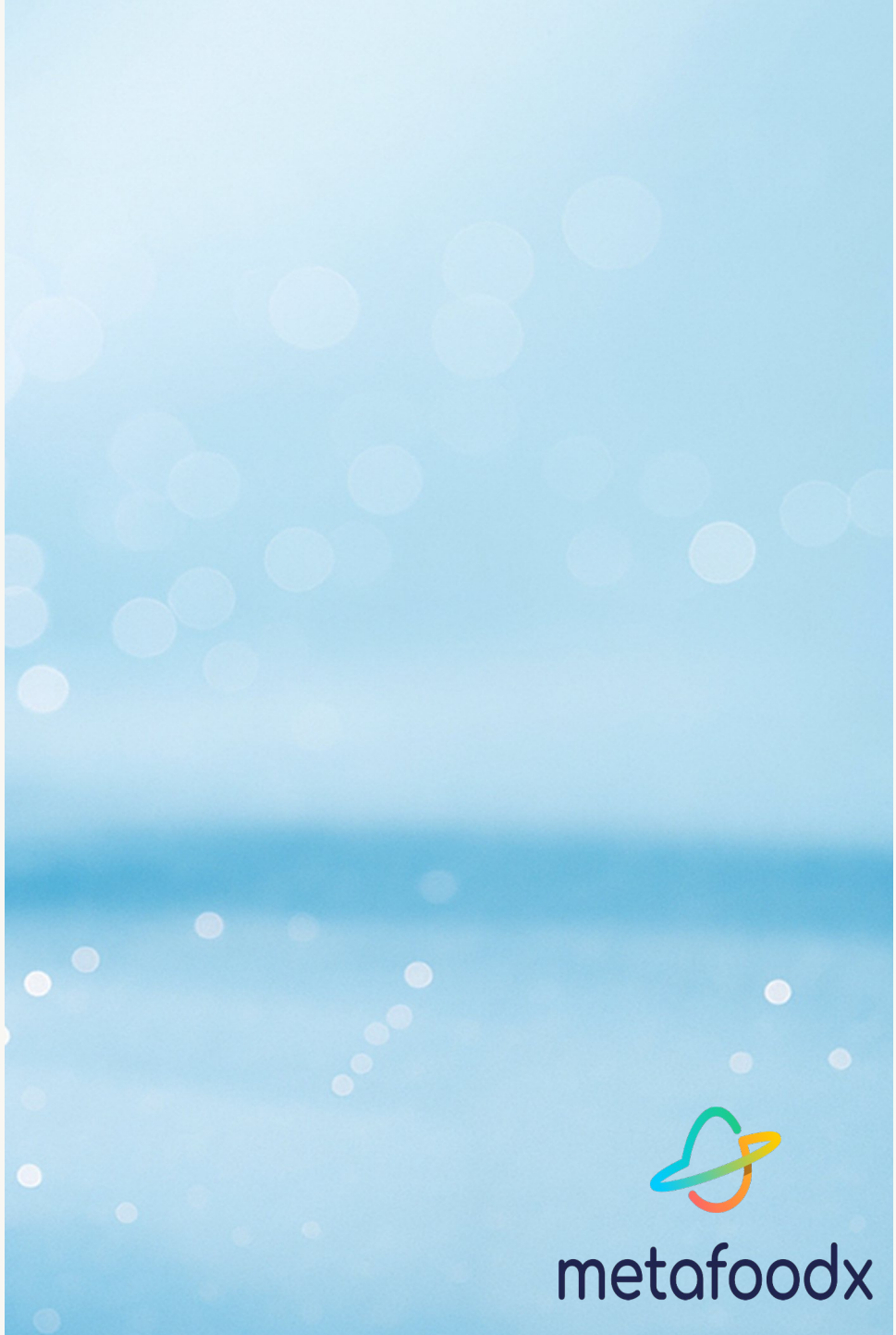
Keys to Successful Kitchen AI Adoption

- Define Clear Objectives : Set specific goals like improving operational efficiency to guide AI adoption.
- Implement Incrementally : Start with small areas such as protein stations to minimize disruption.
- Use Data to Inform : Track leftovers to provide actionable feedback and acclimate the team.
- Engage Frontline Staff : Involve kitchen staff early and present AI as a helpful assistant.



Common Pitfalls to Avoid

Overpromising AI capabilities can damage trust and create unrealistic expectations, aim for practical benefits.

Deploying AI without contingency plans risks operational failures and user disengagement, take incremental steps.

People-Centric Technology Drives Success

1

Technology Must Adapt to Teams

AI solutions should prioritize frontline staff needs, ensuring tools support rather than burden users, enhancing workflow integration and team impact.

2

Simplicity Improves Adoption

Intuitive AI interfaces empower staff, reduce stress, and increase operational outcomes by making technology accessible and easy to use.

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Dream Together: Future of Foodservice

1. Smarter, simpler operations (environment)
2. Production aligned with demand (accurate forecasting)
3. Better food, less waste (responsible consumption)
4. Robot assistants (machine serving people)
5. Extreme made-to-order (food & health)

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Key Takeaways

People-Centric AI Design

AI should prioritize human needs, simplifying workflows and empowering frontline staff for practical and seamless integration.

Task-Specific AI Solutions

Effective AI is tailored to specific tasks, enhancing efficiency and decision-making across all stages from data collection to modeling.

Comprehensive AI Support

AI must assist staff throughout the entire process, from data gathering to data crunching, ensuring robust operational support.

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Contact Information

Fengmin Gong, D.Sc.

Phone: 408.859.8863

Email: fengmin.gong@metafoodx.com

Web: https://www.metafoodx.com

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Thank You!

Let’s partner to help make our food system sustainable!

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