



Pronolog Solutions Private Limited

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CIN: U62020MH2025PTC438363

DPIIT-recognised AI Startup | Food Safety & Inline Remediation

Company Profile for Startup India Seed Fund Scheme (SISFS) Application

Focus	AI-powered food safety for commercial-scale food and agricultural consignments
Flagship innovation	Real-time aflatoxin detection plus inline pulsed-light UV treatment with closed-loop verification
IP	Indian patent application no. 202521085176 (prosecution stage)
Headquarters	Navi Mumbai, Maharashtra, India
DPIIT recognition	DIPP217487
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1. Problem we solve

Aflatoxin contamination in grains, nuts, and other commodities creates major public-health risks, export rejections, and significant financial losses. Conventional testing is largely lab-based and batch-oriented, which is slow and often disconnected from real-time processing decisions. As a result, contaminated lots can be discovered late in the chain, increasing rework, wastage, and compliance risk.

2. Our solution

Pronolog is developing an inline, sensor-integrated system that combines AI-based detection with chemical-free remediation. The system enables segment-level decisions during processing, with verification after treatment to support compliance and auditability.

- Inline detection to identify contamination severity in real time.
- Automated diversion, treatment, or re-treatment decisions based on configurable regulatory thresholds.
- Inline pulsed-light UV treatment with closed-loop verification to confirm post-treatment compliance.
- End-to-end logging of consignment metadata and process outcomes for traceability and continuous model improvement.

3. Patent-pending technical overview

Patent application (India): 202521085176 (under examination). Title: “AI-Based Aflatoxin Detection and Inline Treatment System for Commercial-Scale Food and Agricultural Consignments.”

At a high level, the proposed computer-implemented workflow:

- Acquires spectral measurements per lot or segment at a defined inline detection zone.
- Applies a trained machine-learning classifier to estimate contamination severity and a quantified score.
- Compares scores against stored regulatory thresholds and historical signals to decide treatment versus diversion.
- Controls pulsed-light UV parameters (intensity and duration) and iteratively verifies outcomes after each treatment cycle.
- Stops when thresholds are met or when predefined safety and cycle limits are reached, and logs the full decision trail.

4. Differentiation and industry relevance

Most incumbent workflows focus on detection alone. Pronolog’s approach is designed to combine detection with actionable inline remediation and verification, which can reduce turnaround time and waste while improving compliance confidence.

- Inline, segment-level decisions (treat, re-treat, divert) during commercial-scale processing.
- Closed-loop verification after each remediation iteration.
- Non-contact, chemical-free treatment pathway.
- Designed for deployability using standard sensor modules and general-purpose compute (no lab-grade instruments).

5. Market need and impact

Aflatoxin contamination is a persistent challenge for global food trade and public health. Export-focused supply chains face strict compliance requirements and significant losses due to rejections, recalls, and disposal. The need for faster, closer-to-process monitoring and remediation is increasing as regulators and buyers demand higher assurance.

Aflatoxin contamination is a major food-safety and trade barrier, with studies estimating **USD 6–18B in global annual losses** from trade rejections, healthcare costs, and productivity impacts.

Trade impacts are material: a World Bank–hosted analysis estimates EU aflatoxin standards could cut certain African exports by **~64% (~USD 670M)**, and rejected shipments can add **~USD 10,000 per lot** in demurrage fees even if returned.

This drives demand for testing: the **global mycotoxin testing market** is estimated at **USD 1.6B (2024)**, projected to reach **USD 2.3B by 2029**.

Aflatoxin-specific screening is also expanding; the **aflatoxin detection kit market** is reported at **USD 389.12M (2025)** with forecasts to **USD 923.45M by 2032**.

In parallel, **AI in food safety & quality control** is growing rapidly, estimated at **USD 2.7B (2024)** and projected to reach **USD 13.7B by 2030**.

6. Target customers and business model

- Primary users: grain and nut processors, exporters, warehouses, and large aggregators managing bulk consignments, export promotion councils, authorities, global importers, various other food value chains.
- Stakeholders: QA teams, marketing teams, global partners, global front end offices, compliance teams, and inspection partners who need auditable, fast decisions.
- Commercial model (indicative): equipment deployment plus recurring software and service revenue (monitoring, calibration, reporting).

7. University partnership vision (adjacent initiative)

Pronolog also proposes academic-industry collaboration with universities to launch an online PG Diploma programme in “AI-Powered Food Safety”, aligned to India’s skilling priorities and focused on applied projects and real-world datasets.

- Joint curriculum design and delivery (university academic governance plus Pronolog industry modules).
- Capstone projects aligned to real-world food safety workflows (detection, classification, decisioning, treatment, verification).
- Internships where feasible and merit-based (subject to availability and partner constraints).
- Joint research, field validation planning, and sponsored-project pathways.

8. Team and mentorship

Pronolog’s core team combines AI and product expertise. A domain advisor and academic mentors may be engaged to strengthen field validation, regulatory alignment, and curriculum quality (for the skilling initiative).

- AI and computer-vision expertise (model development, optimization for cost-efficient hardware, deployment pipelines).
- Data and business analytics expertise (product analytics, operations, and industry partnerships).
- Advisor network for domain guidance, research collaboration, and mentorship.

9. Collaboration asks

- Academic MoU or term-sheet discussions (programme governance, ownership, and revenue sharing where applicable).
- Joint steering committee for programme design and delivery quality.
- Access to partner faculty expertise and industry networks for outreach and placements.
- Joint seminars and webinars on AI and food safety.

10. References

- SpringerOpen article link (economic loss estimate): <https://link.springer.com/article/10.1186/s12302-025-01166-x>
- BCC Research press release (AI in food safety): <https://www.bccresearch.com/pressroom/ift/ai-revolutionizes-food-safety-and-quality-control-market>