

# Shalom Keshet

Independent Researcher

Mathematics · Computer Science · Physics

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## Research Interests

- Algebraic and analytic transformation of piecewise-defined functions
- Symbolic computation and mathematically grounded algorithms
- Mathematical modeling of physical systems (geometry, symmetry, invariants)

## Research & Preprints

### A Novel Approach to Transforming Piecewise Functions

viXra:2507.0216, 2025

## Publications & Writing

### Books (Science / Non-fiction)

- Herman Potočnik's *Space Odyssey*

### Books (Fiction)

- *The Lost Boy* (translated into Slovenian)
- *Giratina: The Distortion World*
- *What Happened to Gravity!*

## Technical Skills

- Programming: Python
- Algorithmic problem solving; discrete mathematics
- Symbolic computation; mathematical modeling
- Scientific writing (LaTeX, Markdown)

## Projects

### CADS-Agri (Confidence-Based Agricultural Decision System)

Cross-platform system (web + iOS) implementing a Detect → Verify → Decide workflow with a rover-based crop-monitoring simulation, a Decision Confidence Index (DCI), and a human-in-the-loop approval mechanism.

## **Plantopia: Your AI-Powered Plant Companion (NIEO 2024 Submission)**

AI-assisted plant-care system exploring image-based diagnostics and contextual care recommendations, with emphasis on problem decomposition and user-centered system design.

## **The Factorial Force**

Advanced calculator project focused on mathematical correctness, clean algorithmic design, and extensibility.

## **Honors & Recognition**

- Camp Google, Winner (2020)
- Entrepreneurship Award, IIT Madras E-21 (2025)
- PROMYS India (2025): Waitlisted in Grade 8; encouraged to reapply

## **Education**

Independent study in mathematics, computer science, and physics, with emphasis on proof-based reasoning, algorithmic thinking, and theoretical modeling.

## **Mathematics, Computing & Physics Experience**

- Indian Olympiad Qualifier in Mathematics (IOQM), 2024 and 2025
- Mathematics Olympiad at IIT Bombay, 2024
- Purple Comet! Math Meet, 2025 (High School Mixed Teams)
- International Math Bowl, 2025 (Finalist team)
- Iranian Combinatorics Olympiad, 2024 and 2025
- American Mathematics Contest 10 (AMC 10), 2024
- Aryabhata Ganit Challenge (CBSE), National level
- Indian Computing Olympiad (IARCS): ZIO (2025) and ZCO