

Food Computing Lab @ Ashoka



CENTRE FOR
Data Science
and Analytics

Mphasis AI &
Applied Tech Lab

from Bites to Bytes, everything in between

Cooking humane, intelligent, scalable food solutions,
where food, data, & AI simmer into deliciously interdisciplinary research

1 Indian Food and Cooking Ontology

Establishing a Foundational Indian Culinary Ontology; Semantic Design, Source Identification, Vocabulary Curation, and Knowledge Engineering



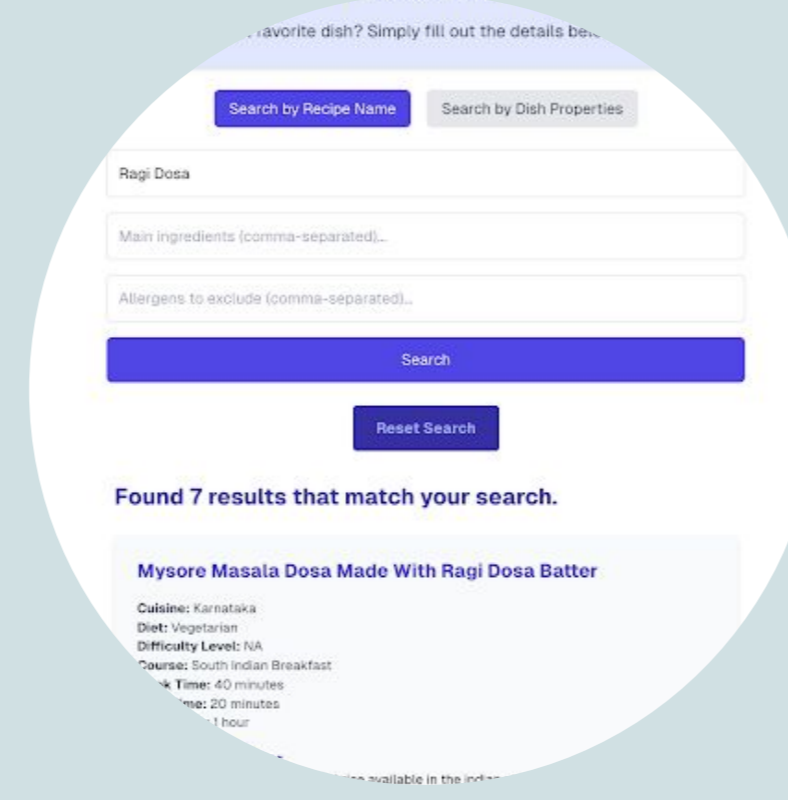
2 Indian Food Knowledge Graph

FKG.in: Building, Validation, Evaluation, Maintenance, and Analysis of a Domain-Specific Knowledge Graph



3 Intelligent Recipe Discovery System

Design and Deployment of an Intelligent Interface for Querying and Exploring the Indian Food Knowledge Graph



4 Global Interoperability

Development of an Interoperable Framework for Seamless Integration of Knowledge Graphs



5 Human-In-The-Loop Validation Pipeline

Combining Expert Insights, Crowdsourced Contributions, and Automated Processes for Continuous Refinement and Accuracy of the Knowledge Graph



6 Recipe Curation from Internet Videos

Mining and Curation of Multilingual Recipe Data using Speech to Text Conversion from Indian Cooking Videos on platforms like YouTube



Can we build a comprehensive, granular, and reliable **Food Knowledge Graph** for Indian cuisine detailing ingredient, recipe, process, nutrition, etc.?

1 Indian Food Image Analysis

Object Detection, Food Classification, and Calorie Estimation for Indian Cuisine



2 Indian Food Language Technology

Exploring the Intersection of Food Data Mining and Computational Linguistics to Address the Diversity of Indian Food Cultures and Languages



3 Indian Food Composition Analysis

Automating the Calculation of Nutrient and Composition Data for Indian Food at Scale



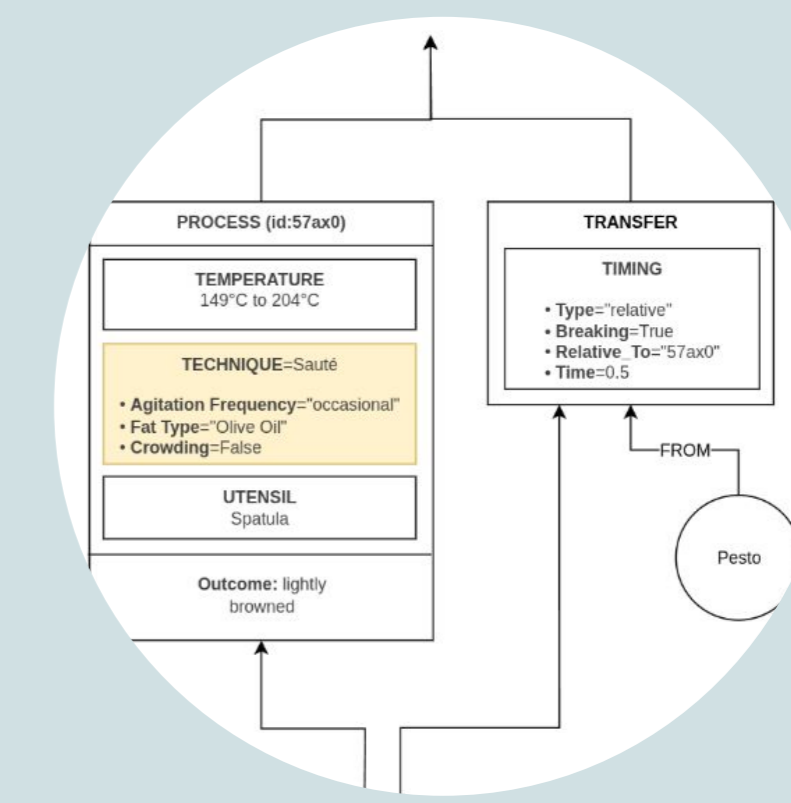
4 Recipe Procedural Soundness Benchmark

Assessing What Makes a Recipe Coherent, Cookable, Correct, and Complete



5 Formalizing Cooking Using Action Graphs

Representing Recipes as Directed Action Graphs to capture Processes, Transfers, Environments, Concurrency, and Compositional Structure.



Can we build **Multimodal & AI Food Solutions** tailored to Indian cuisine that combine visual, textual, and procedural understanding to enable intelligent food analysis, recipe generation, and data interpretation at scale?

1 Natural Language Interface (English)

Developing a User-Friendly Interface for Interacting with Food-Related Datasets and Applications using Natural Language



2 Vernacular Language Interface

Building Interfaces that support Indian Vernacular Languages in both Speech and Text formats



3 Conversational Interface w/ OpenCHA

Creating Conversational AI Systems that enable Interaction with Food Computing Technologies via OpenCHA and Large Language Models (LLMs)



4 Personal Health Navigation System

Designing a Dynamic, User-Centered System to guide individuals in making informed Health and Lifestyle decisions over time



5 Mobile App Development

Designing and Developing Mobile Applications that make Food Computing Insights accessible to everyday Users



Can we build intelligent systems for Personal Health Navigation with contextual and conversational abilities in vernacular text and speech to enable **Food Knowledge Dissemination**?

2024

Building FKG.in: A Knowledge Graph for Indian Food

Saransh Kumar Gupta • Lipika Dey • Partha Pratim Das • Ramesh Jain

Formal Ontology in Information Systems (FOIS); Integrated Food Ontology Workshop [Enschede, NL]; Symposium on Big Data Algorithms for Biology (BDBio) [IISc, Bengaluru, India]

2024

Deciphering psycho-social effects of Eating Disorder: Analysis of Reddit Posts using LLMs and Topic Modeling

Medini Chopra • Anindita Chatterjee • Lipika Dey • Partha Pratim Das

Empirical Methods in Natural Language Processing (EMNLP): Natural Language Processing for Digital Humanities Workshop [Florida, USA]

2024

Enhancing FKG.in: Automating Indian Food Composition Analysis

Saransh Kumar Gupta • Lipika Dey • Partha Pratim Das • Geeta Trilok-Kumar • Ramesh Jain

International Conference on Pattern Recognition (ICPR): Multimedia Assisted Dietary Management Workshop [Kolkata, India]

2025

Extending FKG.in: Towards a Food Claim Traceability Network

Saransh Kumar Gupta • Rizwan Gulzar Mir • Lipika Dey • Partha Pratim Das • Anirban Sen • Ramesh Jain

ACM Multimedia (ACM-MM): Multi-modal Food Computing Workshop [Dublin, Ireland]

2025

What's Not on the Plate? Rethinking Food Computing through Indigenous Indian Datasets

Pamir Gogoi • Neha Joshi • Ayushi Pandey, Deepthi Sudharsan • Saransh Kumar Gupta • Lipika Dey • Partha Pratim Das • Kalika Bali • Vivek Seshadri

ACM Multimedia (ACM-MM): Multi-modal Food Computing Workshop [Dublin, Ireland]

2025

Towards an Action-Centric Ontology for Cooking Procedures Using Temporal Graphs

Aarush Kumbhakar • Saransh Kumar Gupta • Lipika Dey • Partha Pratim Das

ACM Multimedia (ACM-MM): Multi-modal Food Computing Workshop [Dublin, Ireland]

Skill Development and Training

- Past: 1 ISM (Monsoon '23), 3 Capstone Projects (Monsoon '24), Summer Interns - 6 ('23) + 15 ('24)
- Supported 1 Intern & 1 Capstone Thesis in Spring 2025 and 8 Capstone Projects in Monsoon 2025
- 15 Interns were engaged across a variety of Applied Food Computing Projects in Summer 2025



Partners and Collaborators



Food Computing Lab @ Ashoka



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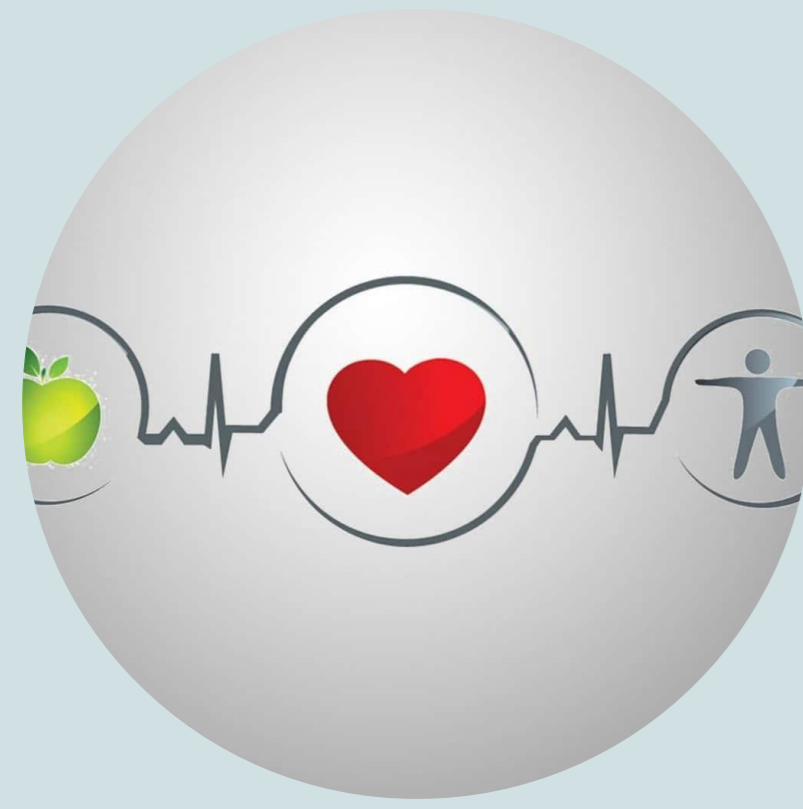
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Food for Thought, Thought for Food

Deepening our understanding of food and its intricate connections, particularly in the Indian context — to foster equitable and sustainable food systems

1 Ashoka Cohort for Health and Wellbeing

Studying the Determinants of Health and Well-Being at Ashoka University in collaboration with KCDH-A



2 Personal Food Model

Developing Individualized Food Models by Integrating Nutritional Data, Health Metrics, and Personal Preferences for Better Dietary Decisions



3 Studying Eating Disorders

Analyzing Behavioral Patterns, Digital Footprints, and Health Indicators to Understand and Support Early Detection of Eating Disorders



4 Food Recommendation System

Generating Personalized Food Recommendations, Tailored to Individual Dietary Needs, Preferences, and Health Conditions



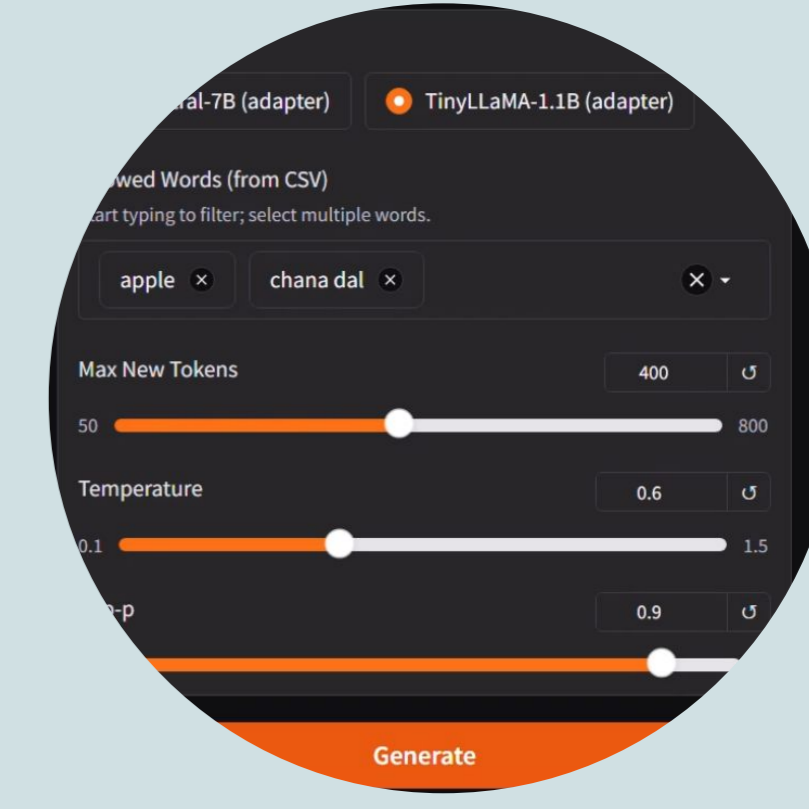
5 Packaged Food Label Analysis

Building a pipeline to Automatically Parse and Analyze Packaged Food Labels - Ingredients, Nutrients, Claims, etc. - and Develop a rich Repository of Food Product Information in India



6 Novel/Alternate Recipe Generation

Investigating approaches for Generating Novel and Alternate Recipes, including Healthier Variants, that reflect varied Culinary Cultures and Contemporary Tastes



Can a holistic and context-aware **Personal Food Model** enable us to study the interplay of food with diet-based diseases, health, and well-being?

1 Enriching FKG.in with Real-World Data

Integrating Diverse Datasets - Such as Nutritional Content, Food Pricing, Consumption Trends, and Agricultural Information - to Enrich the Food Knowledge Graph



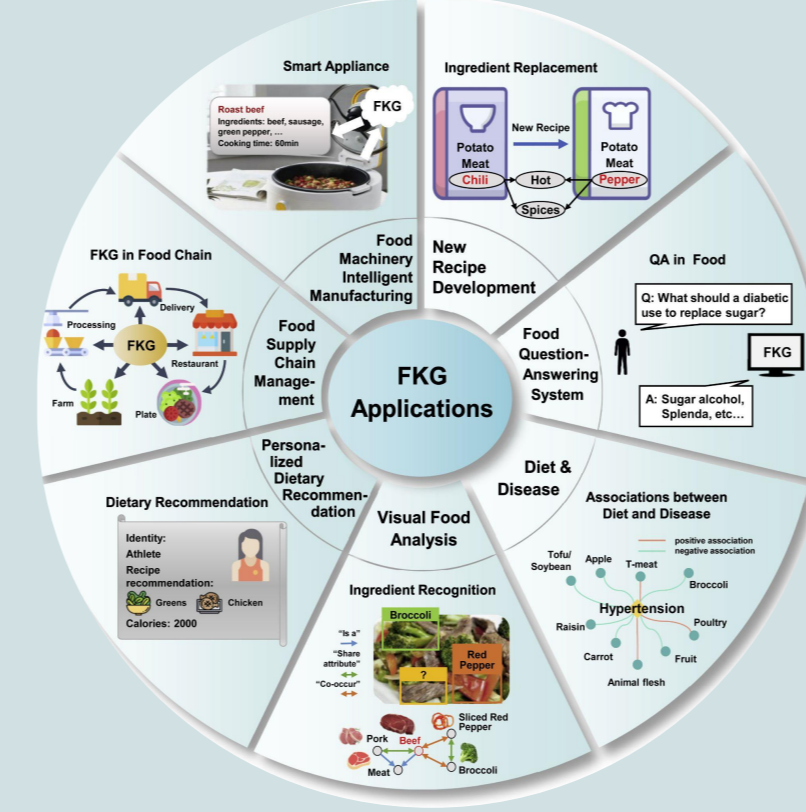
2 Ashoka Eatery Catalogue

Mapping Food Sources, Offerings, and Availability across Ashoka University Campus to Support Research, Accessibility, and Nutrition Awareness, in collaboration with KCDH-A



3 Beyond the Knowledge Graph

Leveraging FKG.in to Explore and Develop Potential Applications that build on top of the knowledge graph



4 Food Culture and Heritage

Documenting the Diversity, Symbolism, and Practices Associated with Indian Food Traditions Across Regions and Communities



5 Mapping Indigenous Food Datasets

Curating the Vast yet Underrepresented, Underdocumented, and Digitally Low-Resource Indian Culinary Knowledge to support comprehensive and inclusive culinary documentation in India



Can we develop a **Food Availability Atlas** by incorporating geo-tagged food data — such as eatery maps, regional availability, pricing, consumption trends, and heritage — to support contextual applications?

Association for Computing Machinery
Advancing Computing as a Science & Profession

October 27–31, 2025
Dublin, Ireland

ACM Multimedia: MMFood'25

- Organized the 1st International Multi-modal Food Computing Workshop with leading scientists and researchers across the world

MMFood'25
Proceedings of the 1st International Workshop on Multi-modal Food Computing

Sponsored by:
ACM SIGMM

General Chairs:
Stavroula-Georgia Mouggiakakou, Shuqiang Jiang, Partha Pratim Das

Program Committee Chairs:
Weiqing Min, Marianna Obrist, Lipika Dey

Publication Chairs:
Ioannis Papathanail, Saransh Kumar Gupta

Co-Located with

1 Agroecology & Local Knowledge Systems

Integrating Indigenous Farming Wisdom with Ecological Data for Sustainable Agricultural Modelling

2 End to End Food Flow Mapping

Mapping the Journey of Indian Food from Agricultural Production to Consumer Consumption

3 Indian Food Safety and Food Policies

Analyzing Regulatory Frameworks, Safety Protocols, and their Impact on Public Health in the context of Indian Food

4 Food Claim Traceability Network

Mapping and Evaluating Nutritional, Cultural, and Marketing Claims Made About Food Across Scientific, Media, Advertising, and Policy Sources

5 Agrifood Computing Applications

Designing and Developing Food Computing Applications to study and address Systemic Challenges in the Agri-Food Systems

Can we model the Indian agri-food ecosystem (**Nutri-agroeconomy & Agroecology**) by integrating local knowledge systems, ecological principles, food policy frameworks, and end-to-end food flow data?

RASOI (Recognition and Segmentation of Indian Thali using AI) Data Challenge

- Hosted along with NCVPRIPG at National Institute of Technology, Srinagar (July 2025) - 11 enrolled teams
- Worked with KCDH-A to curate & develop a structured and labeled image dataset using Ashoka food images
- Tasks for the Challenge: Bounding Box Detection, Food Recognition, and Calorie Estimation



Partners and Collaborators

