# Support for Startup Ecosystem Formation

Adoption year：FY 2022　Principal Investigator：Tokyo Institute of Technology / Professor / Kenji Suzuki, Ph.D.　（As of Sep.2022）

**Greater Tokyo Innovation Ecosystem**

| Subject of Research | Development of Comprehensive AI-Aided Diagnostic System for Multiple Diseases by Means of Our "Small Data" Artificial Intelligence -Toward Getting into the U.S. Market- |
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## Overview

Deep learning requires a large amount of data (10,000 to 100,000 cases), which is the biggest bottleneck in the medical field. We have successfully solved this bottleneck by developing a unique deep learning model that can be trained with a very small number of data (about 100 cases). Using this small-data deep learning, we will develop an AI system that detects lesions in medical images and supports diagnosis. Develop a medical AI prototype through joint research with partner hospitals for diseases for which other research institutions have not started work due to the lack of a large number of cases, and demonstrate that it is possible to develop AI for rare diseases that have been impossible to develop in the past. The project will also demonstrate that AI covering many diseases can be developed in a short time and at a low cost.


a small number of data → deep learning
**Deep learning with small data**
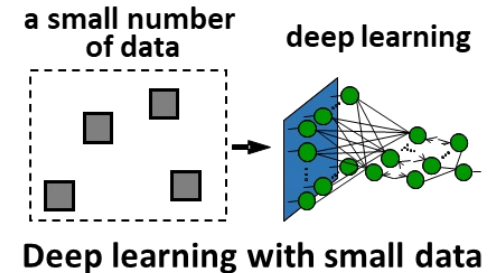
## Business Models（when applying）

We will develop a diagnostic support system for important diseases, including rare diseases, using small-data deep learning, and consider (1) a stand-alone software sales model in which AI software is sold to hospitals, (2) a cloud-based Pay Per Use model in which a fee is charged for each case processed, and (3) a subscription model such as an annual contract.

## Activity Planning（when applying）

Through joint research with partner hospitals, we will develop medical AI software prototypes for diseases for which a large number of cases cannot be collected and for which other research institutions have not yet begun work. We will also demonstrate that it is possible to develop AI for rare diseases for which development has been impossible, and that AI covering many diseases can be developed in a short time and at a low cost.

FY2022　Market research, preparation, and formulation of a collaborative hospital for entry into overseas markets

FY2023　Establishment of a start-up company　→　Plans to apply to NEDO STS, etc.
Developing AI for 2 diseases for commercialization with Japanese hospitals
　　　　→　Filing for pharmaceutical affairs in Japan

FY2024　Developing AI for the above 2 diseases for the U.S. market in collaboration with a U.S. hospital　→　Submission to the U.S. FDA
Developing AI for 8 diseases in cooperation with domestic hospitals
　　　　→　Filing for pharmaceutical affairs in Japan

MISSION: Our unique small data AI provides all physicians with medical AI covering major and rare diseases at a low implementation cost by solving the limitations of large data from AI development.