Artificial Intelligence Subsidy Scheme ("AISS") — Application Form

Applicant: AuraSense Limited
Date of Submission: _/_/2026

Notes for Applicant

> Please refer to the "Guide and Conditions for Applicants of the AISS" at https://aisc.cyberport.hk/aiss before completing this form.

Part A — Applicant Information

FIELD	DETAIL
Category	☒ AI start-ups
Entity Name (Eng)	AuraSense Limited
Entity Name (Chi)	澳覺感應有限公司
Address (Eng)	Hong Kong (full registered address to be confirmed upon submission)
Address (Chi)	香港 (完整註冊地址將於提交時確認)

Entity Description

(English — ~250 words)

AuraSense Limited is a Hong Kong deep-tech AI start-up focusing on neuromorphic computing and edge intelligence for autonomous drone inspection and infrastructure safety. Our core technology, the Spike-based Frequency-Spatial Video Codec (SFSVC), is a neuromorphic video middleware that emulates the spiking and temporal coding behaviour of the biological visual system. Instead of transmitting dense video frames, SFSVC converts spatio-temporal changes into sparse spike events and performs on-

device crack perception and control decisions in real time. This removes dependency on cloud compute while reducing communication bandwidth demand by up to 94%.

SFSVC adopts a bio-inspired multi-rate four-lane architecture — from a hard real-time control lane to higher-level semantic integration lanes — closely mirroring the hierarchical timing structure observed in recent neuroscience research on visual and language processing. In runway crack inspection scenarios, our latest C++-accelerated engine achieves approximately 0.40 ms P50 and 0.56 ms P95 end-to-end control latency at 1280×720 resolution, with 93.8% sparsity and approximately 94% bandwidth saving compared to raw H.265 video. The underlying spike encoding method is protected by a provisional patent, and the system is being positioned as an inspection-grade, vendor-agnostic neuromorphic middleware for drone and robotics platforms.

AuraSense is actively exploring pilot projects with airports, logistics operators and infrastructure owners in Hong Kong, the Greater Bay Area and overseas, aiming to establish Hong Kong as a regional innovation hub for neuromorphic edge AI and autonomous inspection systems.

(Chinese — ~400 characters)

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Workforce

FIELD	DETAIL
Total Number of Employees in Hong Kong	1
Number of R&D Employees in Hong Kong	1

Key Contact Person 1

FIELD	DETAIL
Name (Eng)	Chau Kai Cho
Name (Chi)	□□□
Title (Eng)	CEO

FIELD	DETAIL
Title (Chi)	􀀀􀀀􀀀
Department (Eng)	Executive Office
Department (Chi)	􀀀􀀀􀀀􀀀
Contact No.	92918674
Contact Email	Dicksonchau@aurasensehk.com

Key Contact Person 2

(Not applicable)

Part B — Project Details

Project 1

FIELD	DETAIL
Project Title (Eng)	Neuromorphic SFSVC Engine for Real-Time Drone Crack Inspection
Project Title (Chi)	􀀀􀀀􀀀􀀀􀀀􀀀􀀀􀀀􀀀􀀀SFSVC􀀀􀀀

Project Objectives and Summary

(English — ~250 words)

This project aims to build and validate a production-grade neuromorphic video engine based on AuraSense's Spike-based Frequency-Spatial Video Codec (SFSVC) for real-time crack inspection and control on autonomous drones. The objective is to deliver a C++-accelerated, PREEMPT_RT-ready SFSVC engine that can run on edge devices (e.g. NVIDIA Jetson, x86 with GPU) with P95 end-to-end control latency below 6 ms and communication bandwidth savings of at least 80–90% compared to conventional H.264 video streaming. The requested GPU computing power will be used to train and fine-tune neuromorphic encoders, crack detection models and YOLO-based semantic modules, and to perform large-scale simulations over inspection datasets from airport runways, roads and other linear infrastructure.

Technically, the project will: (1) refine and scale the multi-rate four-lane SFSVC architecture (hard real-time control, signature memory, YOLO semantics, and uplink) with Linux PREEMPT_RT integration; (2) train and optimize neuromorphic spike encoders and crack perception modules using GPU clusters, focusing on low-bitwidth, sparse and event-driven representations; (3) build a reusable inspection middleware SDK for drone and robotics partners; and (4) validate the system in pilot scenarios in Hong Kong and the Greater Bay Area. The project targets inspection-grade robustness (stability under varying lighting, weather, and motion) and aims to establish Hong Kong as a reference site for neuromorphic edge AI infrastructure for smart airports, utilities and logistics corridors.

(Chinese — ~400 characters)

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Project Parameters

FIELD	DETAIL
Preferred Start Date	01/06/2026
Computing Power Required	2 GPU Card(s)
Consumption Period	6 Month(s)

Technology Area

- ☒ Computer Science
- ☒ Information and Communication Technologies
- ☒ Robotics

Industry Sector

- ☒ Construction
- ☒ Information Technology
- ☒ Transportation

Relevancy to the National 14th Five-Year Plan

- ☒ Artificial Intelligence
- ☒ Brain Science and Brain-Like Technology Research

R&D Employees in This Project

TYPE	COUNT
Local R&D employee(s)	1
Non-local R&D employee(s)	0

Project Deliverables

- Production-grade SFSVC C++/Python SDK for drone and robotics integration
- PREEMPT_RT-ready multi-rate neuromorphic engine for real-time crack inspection
- Benchmark reports (latency, compression, bandwidth, energy) on representative datasets
- Pilot-ready demo package for airports / infrastructure owners

Expected Outcomes

TYPE	COUNT	DETAILS
Patent(s)	1	Provisional patent → full patent filing for spike-based neuromorphic video encoding and multi-rate control architecture
Publication(s)	1	1–2 conference or journal papers on neuromorphic video compression and RT control for drone inspection (subject to IP strategy)
Award(s)	0	—

R&D Details

- **Model type:** Neuromorphic spike encoder + crack perception model + YOLO-based semantic detector
- **Training:** Event-based and frame-based convolutional models (tens of millions of parameters), batch sizes 16–64, mixed precision (FP16/FP32) on 1–2 GPUs
- **Datasets:** Runway and pavement crack datasets (tens to hundreds of GB) plus synthetic augmentations, including different lighting and motion patterns

- **Inference:** Highly optimized C++ core with pybind11 bindings, running at ≥125 Hz control rate with P95 end-to-end latency ~0.56 ms in internal CodeSpaces tests (projected ~0.30 ms on bare metal)
- **GPU usage:** Mainly for training/tuning neuromorphic encoders and YOLO models, plus large-scale simulation sweeps to stress-test latency and robustness under different traffic and network conditions

R&D Advantages

- Unique neuromorphic codec (SFSVC) that directly outputs spikes and control signals, rather than compressing video for the cloud
- Demonstrated sub-0.6 ms P95 control latency at 1280×720 resolution with 93.8% sparsity and ~94% bandwidth reduction in internal C++ benchmarks
- Bio-inspired multi-rate architecture aligned with recent brain-like computation research, providing a defensible technical narrative and patent space
- Strong fit for Hong Kong's airport, logistics and infrastructure inspection needs, where low latency, low bandwidth and on-device robustness are critical

Contribution to I&T and AI Development

- Introduces a neuromorphic edge AI middleware layer that can be reused across drones, ground robots and fixed cameras
- Advances Hong Kong's capabilities in real-time, safety-critical AI (autonomous inspection and control) beyond cloud-centric deep learning
- Bridges academic neuromorphic computing concepts with practical deployment, creating reference implementations and benchmarks for the local ecosystem

Contribution to Technological, Social or Economic Growth of Hong Kong I&T and AI Sectors

- Supports safer and more efficient inspection of runways, bridges and public infrastructure, reducing manual, high-risk work
- Opens new market opportunities for Hong Kong AI and robotics companies in smart airport operations and infrastructure management in the GBA and globally
- Positions Hong Kong as a testbed for neuromorphic edge AI infrastructure, attracting collaborations with drone operators, system integrators and research labs

Partnership

- In discussion / exploratory talks with drone delivery and inspection companies (e.g. regional delivery operators, AI robotics start-ups) for pilot integrations

- Open to collaboration with local universities and R&D centres on neuromorphic algorithms and real-time systems

Re-submission

☒ No — This is a new application.

Part C — Attachment List

#	ATTACHMENT	FILE NAME	STATUS
1	Project proposal (max 10 slides, PDF)	Appendix_A.pdf	☐ Prepared
2	Team structure and CVs	Appendix_B.pdf	☐ Prepared
3	Track records of computing power usage	Appendix_C.pdf	☐ If applicable
4	Financial proof	Appendix_D.pdf	☐ **You must provide** (bank statements past 3 months or latest audit)
5	Certificate of Incorporation & BR	Appendix_E.pdf	☐ **You must provide** (CI + BR copies)
6	Start-up document proof	Appendix_F.pdf	☐ If applicable (Cyberport/HKSTP incubatee, TSSSU, RAISe+)
7	Shareholding structure	Appendix_G.pdf	☐ If applicable
8	Other supporting documents	Appendix_H.pdf	☐ If applicable

Part D — Declaration

I, on behalf of **AuraSense Limited**, declare that —

(a) the applicant has carefully read and fully understands the Guide and Conditions for Applicants of the Artificial Intelligence Subsidy Scheme (the Guide) and all explanatory notes as set out in this form;

(b) all the information provided in this form as well as the accompanying information is true, complete and accurate and reflect the status of affairs as at the date of submission;

(c) the applicant has obtained consent from all relevant persons/entities for the disclosure, use and further disclosure by the Government of their information/personal data;

(d) the applicant has not applied for or accepted and will not apply for or accept any additional subsidy, incentive, payment, reimbursement or indemnity for the same scope of the project or its related subject matter from other Government subsidy schemes;

(e) the applicant will not disclose the Confidential Information to any third party except as permitted under the Guide;

(f) the applicant shall conform in all respects with all legislation, regulations and by-laws of the Hong Kong Special Administrative Region in carrying out the project.

FIELD	DETAIL
Signature	(To be signed)
Company Chop	(To be stamped)
Name of Signatory	Chau Kai Cho (□□□)
Post Title	CEO, AuraSense Limited
Date	_/_/2026