

Details of Projects submitted by the Singapore Delegation

S/N	Students	Project Description and Team's Insights
1	Name: Ang Shi Qi Georia (洪詩淇) School: Hwa Chong Institution Level: JC2 Language Proficiency: English, Mandarin	<p>LuminaSand: Harnessing the Optoelectronic Potential of Silicon Dioxide with Focused Laser Beam</p> <p>The increasing reliance on optoelectronic devices in communication, sensing, and display technologies has driven the search for cost-effective, scalable, and highly efficient materials, as conventional optoelectronic materials face challenges related to scarcity, high production costs, and environmental concerns. To mitigate these challenges, Georia used a laser to fabricate a composite material containing Silicon and Carbon. The unique properties of this composite material hold promising potential applications in optoelectronics, steganography, and piezoelectric actuators.</p> <p>Reflecting on her experience at ISEF 2025, Georia is grateful for the opportunity to connect with passionate individuals from diverse backgrounds who share her love for science, while allowing her to gain invaluable knowledge from leading experts across various fields. The meaningful experience has inspired her to further pursue her journey in STEM, in hopes of making a positive and lasting impact on the world.</p>
2	Name: Felicia Tan Ee Shan (陈羿杉) School: Raffles Institution Level: JC2 Language Proficiency: English, Mandarin Name: Low Li Ying Amy (刘励莹) School: Raffles Institution Level: JC2 Language Proficiency: English, Mandarin	<p>Great Minds Think Alike, Great Models Think All At Once: MAESTRO, A Unified Framework for Video-Audio Understanding & Reasoning</p> <p>Hateful online content is becoming more subtle and difficult to detect, especially in videos where hatefulness may only be apparent when both visual and audio elements are considered together. Felicia and Amy developed MAESTRO, a novel AI framework that improves how computers detect hate in videos by helping them understand not only what is being shown, but also what is being said, and when. By breaking videos into meaningful segments, combining different types of information, and analysing them holistically instead of by individual frames, MAESTRO can identify hateful content more accurately and efficiently than existing models.</p> <p>Reflecting on their experiences at ISEF 2025, Felicia and Amy are grateful for the opportunity to represent Singapore on the international stage. Presenting their work to international experts and fellow young researchers had deepened their appreciation</p>

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		of the impact of AI on real-world issues. The experience was both humbling and inspiring, and they are thankful for the unwavering support of their mentors, teachers, family, and friends.
3	Name: Rameshkumar Dhanvine (ரமேஸ்குமார் தன்வின்) School: Temasek Junior College Level: JC2 Language Proficiency: English, Tamil	Think, Generate, Optimize: Presenting a Novel Fully AI-Driven Design Framework for Metasurface Lenses To advance the frontiers in designing metasurface lenses, Dhanvine developed METAGEN (Metasurface Generation Engine for Next-gen Optics), an AI-powered framework that automatically generates and evaluates hundreds of freeform designs based on a desired light response. By overcoming the current limitations of predefined geometries and time-consuming electromagnetic simulations, his project improves precision, speed, and accessibility of meta-lens design, therefore accelerating innovations in optics such as AR glasses, holography, and LiDAR. ISEF 2025 was an eye-opening experience for Dhanvine, allowing him to connect with passionate like-minded innovators, and learn from experts in various research domains. He is grateful for the opportunity to share his work on the international stage, and is excited to continue exploring the real-world impact that can be created by AI.
4	Name: Teo Shen Han (張深涵) School: River Valley High School Level: JC2 Language Proficiency: English, Mandarin	Birds of a Feather: Novel Plumage Colour Analysis for Subspecies Assessment of Chestnut-Winged Babbler Species Complex While taxonomy is a crucial cornerstone of conservation, several avian subspecies are qualitatively described based on plumage colouration, which can lead to inaccuracies in their taxonomy. Shen Han hence devised methodologies to quantitatively compare the plumage of the Chestnut-Winged Babbler subspecies, highlighting the importance and viability of large-scale taxonomic revisions in targeting avians globally using such quantitative colourimetric methods. Through ISEF 2025, Shen Han is glad to have met like-minded peers who share similar passions in making a difference in their respective fields of research. He is thankful for this opportunity to bring a lesser-known field of taxonomy to the global stage, and appreciates the help of his parents, mentors, and teachers throughout his research journey.
5	Name: Ying Liqian (应礼谦)	Make24: Elegant Elementary Bounds for a Numbers Game

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	School: NUS High School of Mathematics and Science Level: Year 4 Language Proficiency: English, Mandarin	<p>Make24 is a brain teaser where players string together number cards and mathematical operations to form an expression that “makes 24”. Liqian’s project investigates the mathematical properties of this brain teaser by applying classic inductive techniques in a novel manner, highlighting the potential of similar games in mathematical communication through experimentation and exploration.</p> <p>ISEF 2025 was a highly enriching experience for Liqian, as he had the opportunity to interact with and learn from peers and judges alike, to appreciate the fascinating projects and intricacies of the STEM fields.</p>
6	Name: Wang Zerui (王泽睿) School: NUS High School of Mathematics and Science Level: Year 6 Language Proficiency: English, Mandarin Name: Kwok Xin Ze Vincent (郭信泽) School: NUS High School of Mathematics and Science Level: Year 6 Language Proficiency: English, Mandarin	<p>LiDRNet: Lightweight Inertial Dead Reckoning Network</p> <p>LiDRNet is a novel and fast AI model designed to help people and devices with wayfinding indoors, where GPS signals are weak or unavailable. Unlike current systems that rely on satellites or complex external equipment, LiDRNet uses data from smartphone motion sensors to accurately track real-time movement. Its compact design makes it ideal for use in everyday devices, helping to improve indoor navigation for tasks such as locating persons and equipment, or aiding in search and rescue operations.</p> <p>During ISEF 2025, Zerui and Vincent were inspired by the passion and creativity of the student researchers from around the world. They are thankful to their parents, mentors, and friends who have made their research journey enriching and enjoyable.</p>