# Yevgeni Yermolin leads the way in energy-efficient AI technology



In an era defined by rapid technological advancements, the integration of artificial intelligence (AI) across various sectors has become a focal point of operational efficiency. A critical player in this domain is Yevgeni Yermolin, a prominent researcher affiliated with Technion-Israel Institute of Technology. Recognised for his contributions to visual sensing and power-efficient technologies, Yermolin is spearheading efforts aimed at transforming theoretical concepts into practical, energy-savvy hardware solutions.

Technion, ranked among the top 100 universities globally, boasts a legacy of cutting-edge research and innovation. The institution's Visual Sensing Theory & Applications Laboratory (VISTA), where Yermolin has made significant contributions, is a prominent hub for exploring the applications of computer science, mathematics, engineering, and medicine in developing sustainable technologies. Yermolin notes the lab’s mission focuses on converting abstract theories into robust hardware implementations, fostering a collaborative environment that often leads to unexpected breakthroughs. His work has centred around assessing power consumption, area allocation on chips, and the requirements for effective logical elements, which are all crucial for developing energy-efficient AI systems.

As AI technology proliferates, the energy consumption from AI models has raised concerns, prompting researchers like Yermolin to design innovatively low-power AI chips. His notable research article, "Feature Map Transform Coding for Energy-Efficient CNN Inference," delves into optimising convolutional neural networks (CNNs) to enhance their efficiency while maintaining their accuracy. Yermolin explained that tech companies increasingly seek to create AI models that demand less computational power, employing techniques such as model compression and quantization to achieve their objectives. This shift not only addresses energy consumption but also advances sustainability efforts in AI.

Beyond hardware design, Yermolin’s research encompasses the development of energy-efficient algorithms aimed at minimising the power demands associated with AI tasks. His work specifically addresses challenges in AI image processing, which is critical as the demand for battery-operated devices grows. By innovating around image encoding techniques, Yermolin aims to reduce memory access—one of the most significant energy drains in AI processing—thus supporting longer device battery lives and making AI applications more sustainable.

Specialised hardware is also gaining traction in relation to advancements in neural networks, with Yermolin emphasising the importance of creating hardware tailored for the distinctive parallel processing demands of these networks. His participation in conferences, such as IJCNN 2020, highlights the emerging trend towards Application-Specific Integrated Circuits (ASICs) and Field-Programmable Gate Arrays (FPGAs), which can customise hardware configurations to enhance the performance and efficiency of neural networks. This demand for specialised hardware necessitates a continuing dialogue within academia and industry, pointing to a future where hardware and software cohesively enhance application performance.

Yermolin further highlights the vital relationship between academic research and industry imperatives, dispelling misconceptions that academia is detached from practical applications. Rather, many research projects are funded and driven by industry needs, ensuring immediate relevance to real-world challenges. Graduates often find roles in leading tech companies, illustrating the seamless transition between academia and industry that benefits technological innovation.

In addition to his research contributions, Yermolin has authored three significant articles regarding the hardware implementation of neural networks, elucidating topics that range from energy-efficient CNN inference to early-stage performance analysis of neural network hardware. His affiliation with the IEEE has provided him with access to key conferences and resources pertinent to his academic and professional development, enhancing his capacity to contribute meaningfully to the field.

As the global community moves toward an increasingly interconnected and technology-driven future, the insights shared by leaders like Yevgeni Yermolin will be instrumental in promoting efficiency and performance in AI systems, ultimately shaping the landscape of various industries.

Source: [Noah Wire Services](https://www.noahwire.com)

## References

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* <https://www.bisinfotech.com/advancing-power-efficiency-in-ai-shared-by-yevgeni-yermolin/> - Supports the ranking of Technion among the top 100 universities globally and the role of the Visual Sensing Theory & Applications Laboratory (VISTA).
* <https://vista.cs.technion.ac.il/people/> - Confirms Yevgeni Yermolin's affiliation with the Visual Sensing Theory & Applications Laboratory (VISTA) at Technion.
* <https://www.bisinfotech.com/advancing-power-efficiency-in-ai-shared-by-yevgeni-yermolin/> - Details Yermolin's research on power consumption, area allocation on chips, and the requirements for effective logical elements in developing energy-efficient AI systems.
* <https://www.bisinfotech.com/advancing-power-efficiency-in-ai-shared-by-yevgeni-yermolin/> - Discusses Yermolin's work on designing low-power AI chips and optimizing convolutional neural networks (CNNs) as described in his article 'Feature Map Transform Coding for Energy-Efficient CNN Inference'.
* <https://www.bisinfotech.com/advancing-power-efficiency-in-ai-shared-by-yevgeni-yermolin/> - Explains the use of techniques such as model compression and quantization to reduce computational power demands in AI models.
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* <https://news.google.com/rss/articles/CBMikgFBVV95cUxPZDdxZ0Z0OENkRVFNdHlYQnBuMVpucE42bkQzMEJ3UDRaRkFyZlhSVzJwMk9PdkJlaEJsNERnWlhrNGhlVUlnRjRPZE5ZZE9fallCcExkQ1ZXdUg3QjRCRHZ3MGdqVk85TWc3dTk1RGw5MUZBMVhoZUh1Q1FjV0tDNlp2QndvVm5hVHNNemhqamdPZw?oc=5&hl=en-US&gl=US&ceid=US:en> - Please view link - unable to able to access data