

Dear readers,

Last month, we mentioned that robotics would be moving back into focus at NanoSen. This month, we are starting with a technology that has been part of our robotics development for quite some time: our **Force Sensing Matrix**.

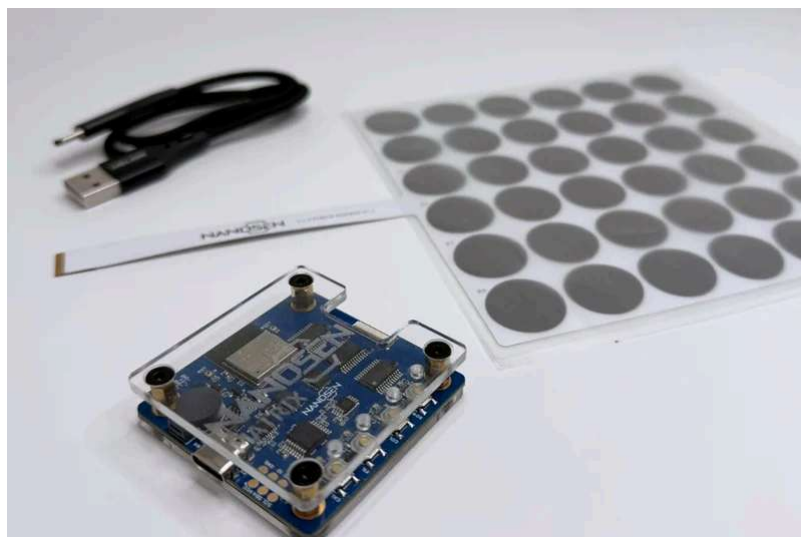
Many of you have already seen it integrated into our robotic gripper demonstrators. What we have talked about much less is how the technology behind it actually developed and how much engineering was necessary to get there.

From First Matrix to Robotic Gripper

Our first matrix concepts date back more than two years. The objective was to move beyond single-point force measurements and create a flexible sensing surface capable of detecting force distribution across multiple sensing points simultaneously. One of the biggest technical challenges was crosstalk between neighboring sensing elements. Solving this required more than changes to the sensor layout.

The breakthrough came with the combination of our sensing technology, dedicated readout electronics and **Force Sensing Impedance (FSI) technology**, enabling active crosstalk elimination and stable measurements across the matrix.

From there, the technology developed quickly. The result is our current **Force Matrix Kit**, featuring a 6×6 matrix with 36 sensing points and support for larger configurations with up to 100 sensors



For robotics applications, we later miniaturized the concept into a 4×6 matrix with sensing elements with the size of just 4 mm. Integrated directly into a robotic gripper, the matrix enables detailed measurement of force distribution at the contact

surface and provides the information required for functions such as slip detection and adaptive grip control.

We have now documented the complete development story from the first concepts and the crosstalk challenge to our current robotic gripper applications in a new article.

→ [Read: From First Sketches to Robotic Grippers: The Evolution of Our Force Sensing Matrix](#)

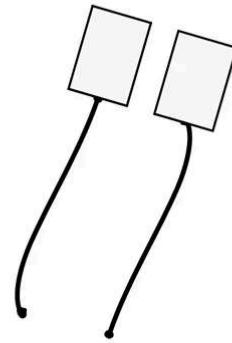


Over the past months, we have been working on a new approach which is going to considerably simplify the overall system while maintaining the reliable, crosstalk-free measurements our matrix technology is built on.

The first prototypes are already being tested in our lab, and the results are giving us a very good reason to keep pushing this development further.

As everything continues in this direction, our Force Sensing Matrix will soon look quite different from the one you know today.

And yes, we'll show you, just not quite yet.



Looking Ahead

Some of the developments currently being tested in our lab are getting increasingly difficult to keep off camera. If you follow us on LinkedIn, keep an eye out over the next few weeks - a new video or two might give you a first glimpse of what we've been working on.

Best regards,

The NanoSen Team

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