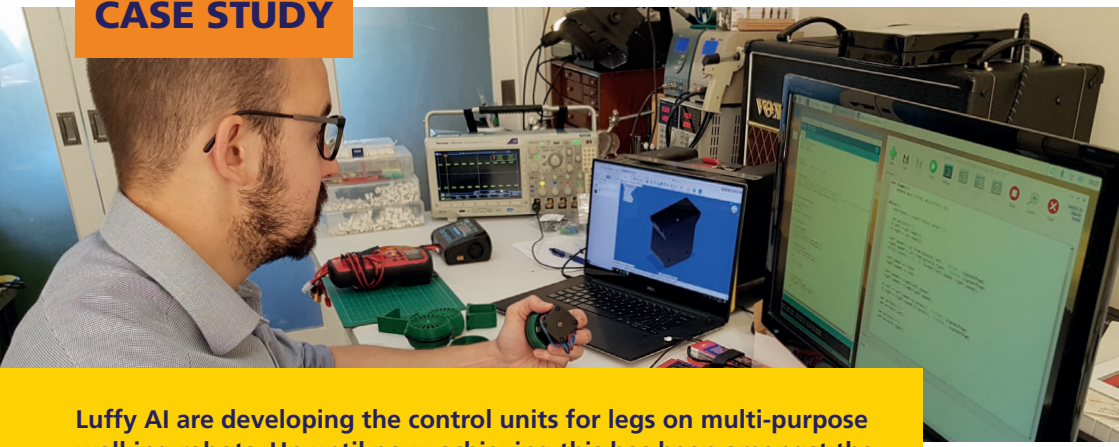
A Business with Legs That Can Go Far

CASE STUDY



Luffy AI are developing the control units for legs on multi-purpose walking robots. Up until now, achieving this has been amongst the hardest challenges for applied AI and robotics.

The founders of Luffy AI were working on fusion physics research at the UK Atomic Energy Authority, Culham, when they noticed a trend in AI veering towards video, image and big data analysis rather than more physical hardware applications.

"It was clear that the current generation of AI technologies were struggling to make the leap into robotic hardware as embedded AI controllers" CEO Dr Matthew Carr explains.

To deal with this problem, Luffy AI was founded to develop novel AI solutions that can be used as embedded controllers for robotic limbs and industrial control applications.

Luffy AI believe this technology could have a big impact on industries ranging from hazardous environments in the nuclear sector, all the way down to last mile delivery in the autonomous vehicle revolution.

The potential for this kind of robotic walking is huge. They can play a significant role in environments which are considered very hazardous for humans, including nuclear sites like Fukushima or inside the core of future nuclear plants where it is highly dangerous for humans to operate, for instance, replacing components. Such operations are extremely expensive now, but with use of this technology the cost will fall making operating costs much lower.

In logistics, whilst an autonomous vehicle can drive to an address, it will take a robot capable of negotiating the last few metres to complete the journey from the truck to the doorstep. These robots will need the sort of advanced embedded AI controllers being developed by Luffy AI.

Luffy AI is about 2 years away from demonstrating their AI in a full-scale field prototype. So far, the results have been promising.

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European Union
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OxLEP Business

Support from OxLEP Business

After approaching OxLEP Business for support, the company has come a very long way. First, a grant from the OxLEP Business Elevate programme helped Luffy AI to buy specialist computing hardware for performing the enormous amounts of physics simulations used to train the networks. "Running the simulations requires a large amount of computational power" Alex explained. "This kind of compute is expensive and hard to access for small businesses. With the support of the OxLEP Elevate grant we were able to assemble a high-performance computer cluster."

They have now been awarded a second grant through the Innovation Support for Business (ISfB) programme that will fund the next phase of embedded AI research and a 3D printer for prototyping robotics components. They were also paired with an ISfB adviser to help them identify weak spots in their business plan.

"We had a vision for the technology, but we knew our knowledge of running a business was less developed. Working with an ISfB advisor, we quickly learned the business skills we needed, including how to pitch and raise money to finance our next stage of development," said Matthew.

Luffy AI has had also received guidance about preparing key documents and being ready for key meetings. The directors identified the most significant gaps in their knowledge, and these have been addressed in a tailored package of support through ISfB in marketing, creating the right business structure and assembling a tangible sales plan.

Looking ahead

According to Matthew Carr, the impact has been massive in a short space of time:

"I think one of the main things we have gained from the ISfB programme is confidence. We now have a much better understanding of how the innovation to commercialisation pipeline happens. We know what the next business steps are and can now focus our efforts on execution of our R&D strategy.

Luffy AI recognise their innovation will become a vital part of many products. "What we are creating will become a fundamental technology that will be needed in all sorts of areas. If we can crack it, it will be an enabling technology for all sorts of other companies and products."

"We have to be realistic at this stage. There may be obstacles, for instance needing resources that are far beyond what we can currently access. All we can say right now is that this technology has the potential to go all the way."

"Our plan is solid; we just need to focus on executing it. We're hoping that in 12 months we will be reporting our success.

Is there anything you have learned that you want to share?

It is worth taking the leap. Just because you are uncertain doesn't mean your business idea is not viable. Oxfordshire's innovation environment is really encouraging and there are big 'eco systems' that will welcome you, so don't be afraid of getting involved.

Most importantly, take advice early. We spoke to OxLEP Business and their ISfB team at an early stage. I'd say that is essential. Creating an innovative business is a process which can't be rushed; moving from a technical capability through to being confident about your business abilities is an important journey.

About Luffy AI
Aistetic is based at Culham in Oxfordshire
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Find out more about OxLEP Business' Innovation Support for Business (ISfB) programme and how it can help your Business to achieve its own goals.

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