

Metail: translating cutting edge research into commercial success

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A start-up company established by a team including several Department of Engineering alumni is on track to revolutionise the world of fashion. Metail (www.metail.co.uk) is a London-and Cambridge-based company that has developed cutting-edge technology intended to help shoppers buy clothes online. By providing a few measurements via a webbased user interface, users can create accurate 3D models of their own bodies. These are used to make garment size recommendations and to visualise how clothes will hang to fit the body. Metail's web user interface is designed to be integrated directly within existing e-commerce websites and provides significant benefits to retailers including increasing customers' confidence to buy and reducing operating costs. By applying state-of-the-art technology in a way that is focussed on the needs of both consumers and retailers, Metail plans to eliminate the barriers to online clothes shopping.

Metail was founded in 2008 by Chief Executive Officer Tom Adeyoola (Economics, 1994) and Chief Scientific Officer Dr Duncan Robertson (Engineering, 1994 and 1999), both alumni of the University of Cambridge. Duncan is a former PhD student of Professor Roberto Cipolla, head of the Computer Vision and Robotics group within the Machine Intelligence Laboratory at the Department. Roberto also played a significant role in the creation of Metail. Not only were the results of cutting edge research carried out within his group influential in convincing Tom that Metail's key technological problems could be solved, Roberto was also responsible for introducing Tom to Duncan, and providing technical



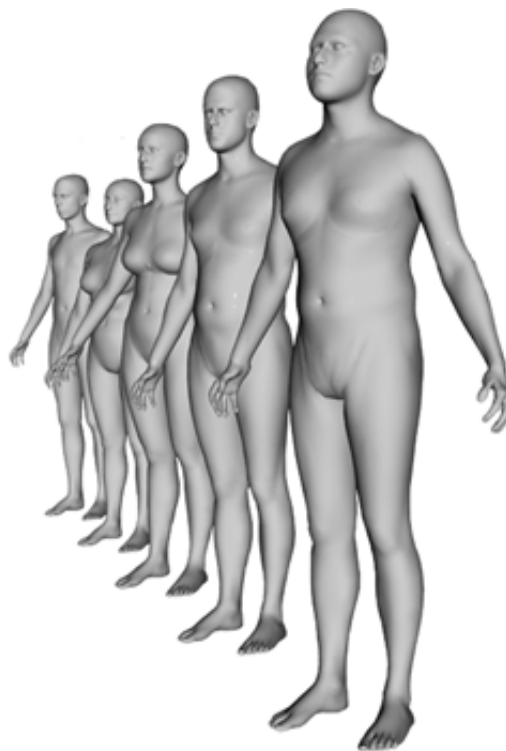
By providing a few measurements, for example by uploading a photograph of themselves wearing tight fitting clothes, users can create accurate 3D models of their own body shapes. By uploading a single face photograph, users can also visualise their own heads – and even try out different hairstyles. These models can be used to visualise different outfits and to make accurate size recommendation. Click image for larger version

advice. Metail has also collaborated closely with another of Roberto's PhD students, Yu Chen, providing financial support for his PhD as well as a commercial focus for his research efforts. Yu Chen now works full time at Metail, and the company employs a total of seven Department of Engineering alumni, including Chief Technical Officer Jim Downing, Head of Operations Ed Clay, and Board Chairman Charles Tavner.

To date, Metail has been successful in obtaining funding, launching a beta version of its product via Facebook, and expanding its team. The company was established using investment capital provided by friends and family investors. Since then the business has raised more than £2M in equity funding from private individuals. Having taken on its first employee in April 2010, the company now employs 18 full time staff who are divided between its technology, operations, and marketing teams. At present Metail is initiating large scale commercial trials with Tesco, one of the UK's largest retail businesses and a big name department store.

Metail isn't the first start-up company to try to sell technology related to garment visualisation and size recommendation. Several others have tried – and failed – in the past. However, Metail's management team believe that they have the right product at the right time. Today, fashion e-commerce is one of the fastest growing Internet sectors with a UK growth rate of around 20% per annum. However, persuading new and existing customers to shop for clothing online remains a significant challenge for retailers. The key problem is to give customers sufficient confidence to buy by addressing their concerns about suitability and fit. Metail's technology addresses both of these concerns, and also reduces the cost to retailers of catalogue photography and handling customer returns.

A large part of the reason why Metail is succeeding where others have failed is the ability to commercialise research quickly.



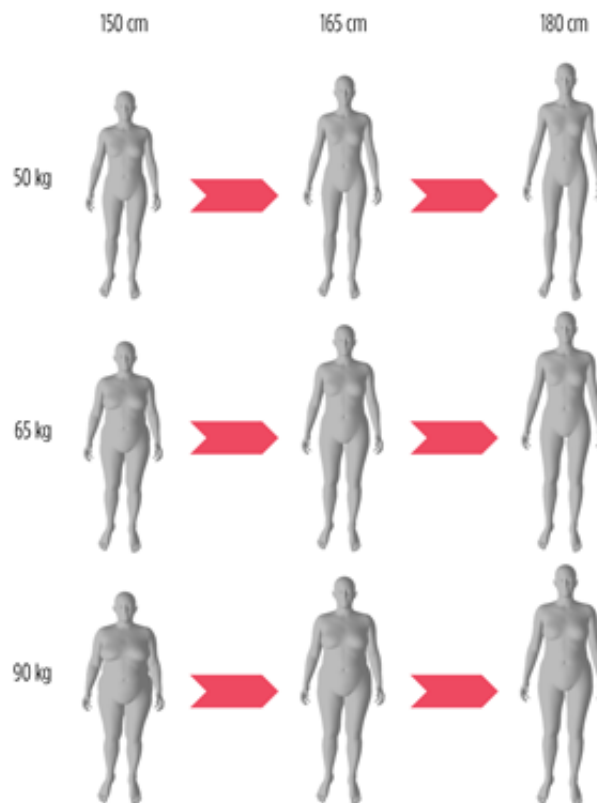
Metail's technology works by recovering a 3D model from measurements provided by the user, for example some physical measurements like weight or height, a 2D silhouette extracted from a photograph, or a depth image obtained by a Microsoft Kinect sensor. In general the task of recovering a 3D model from a limited set of measurements is hard –many possible 3D body shapes could give rise to nearly the same set of measurements. However, by comparing the input measurements with a database of nearly 5000 male and female body shapes, Metail's software can make confident body shape predictions given a relatively small number of measurements (e.g. weight and height). More measurements make it possible to capture the nuances ('column' and 'pear' body shapes).

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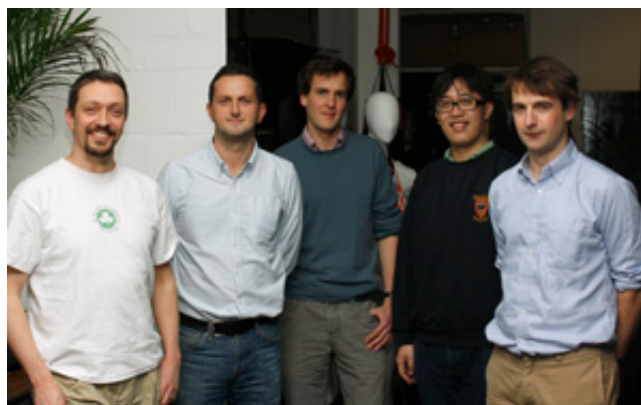
Thanks to recent advances in the field of computer vision, it is finally possible to create accurate 3D models of users' body shapes and for retailers to create photo-realistic garment models in a way that fits in with their existing catalogue photography processes. However, transforming research ideas into a commercial product has not been without substantial challenges. Duncan describes how Metail has worked hard to overcome some of these: "Much of Metail's core body modelling and outfit visualisation technology is based on recent computer vision research, including some of the excellent work conducted by Professor Cipolla's group within the Department of Engineering. Whilst much of this work has been published, the most valuable IP isn't really vested in publications or patents, but in people's heads. For Metail, the ability to work directly with researchers has been essential to effective technology transfer. In large part, our success in developing cutting-edge technology can be attributed not to formal processes for technology transfer but to personal relationships with people inside the research community.

"The differing priorities of researchers and business managers can sometimes present significant barriers to effective collaboration. Researchers solve problems because the solution is novel, not necessarily because it is commercially relevant. In consequence, problems often become less interesting to researchers right at the point when they become more relevant to business managers. In this regard, I think Metail did well to put both researchers and business people in the boardroom from day one. This is a significant benefit of the start-up model. Shared equity cements and aligns people's interests in a way that is hard to achieve via contractual mechanisms alone. Today Metail continues to expand its research team in-house, recruiting not only first rate researchers but also experts in technology transfer.

"Integrating research output into commercial software systems presents some unique engineering challenges. Research software is often inherently complex and the iterative nature of the research process means that prototype implementations are often inefficient, poorly written, and relatively untested. Building production software around such prototypes is inevitably difficult. Planning development work effectively is a particular challenge. The credibility of start-up companies with their investors and their customers depends critically on



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Metail's Department of Engineering alumni: from left to right, Jim Downing (1995), Duncan Robertson (1994, 1999), Edward Clay (2002), Yu Chen (2008), Charles Tavner (1994)

hitting deadlines, but research-oriented projects inevitably involve a disproportionate amount of uncertainty and risk. Metail did the right thing by practising early integration of our research technology with our prototype web platform. This turned out to be extremely important from the perspective of our relationships with our customers. First, our early demos were a useful means of convincing retailers to believe in our vision for the technology, even before that vision was fully realised. Secondly, because we were able to demonstrate working prototypes relatively early on in the development cycle, we were able to harvest the valuable customer feedback that prevented us from making completely the wrong product.

“Sometimes there remains something of a cultural divide between research, development, and product and marketing teams. It is very easy for business managers to underestimate the massive amount of commercial value that research provides. But conversely, it is very easy for researchers to underestimate the massive amount of effort required to develop research software into production ready, commercial systems and to sell those systems. Within Metail constant communication has been critical to enabling all teams to work together effectively.

“Finally, despite all our best efforts, sometimes things didn’t go quite as we hoped. It is in the nature of research that it doesn’t always deliver exactly what is wanted, when it is wanted. The old adage ‘plan for success but be prepared for failure’ has been relevant here. But having a clear vision of where we wanted to go and being able to communicate that vision to investors and customers alike was essential. Even when things didn’t work out as well as we had hoped, we worked hard to leave no one in any doubt that we would continue to build on the starting point we had established and deliver on our vision.”

For further information about Metail please visit www.metail.co.uk

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