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**Orthogonal Transforms Applied to Biometrics**  
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I worked with Assoc. Professor Serdar Boztas on my project which involved learning a lot of background material in biometrics, mathematics and theory on image compression. Biometrics refers to the science of automated identification or verification of the identity of a person based on their physiological or behavioral characteristics. Currently there is research being conducted for feature extraction methods that can be applied to biometrics. Different orthogonal transforms, which are used in image compression are applied. The ultimate aim is to be able to have good compression ratios and still be able to apply matching to the compressed templates.

I learned a lot of background theory into biometrics so that I can have a clear understanding of the processes and goals in biometric identification. I studied using fingerprints as a biometric mostly, and the current used methods of feature extraction applied to this.

Some new mathematics that I learnt included the Fast Fourier Transform, Reed-Muller codes and their decoding, Gray codes and Orthogonal Transforms. The Orthogonal Transforms I studied were the Walsh-Hadamard, the Haar, and the Karhunen-Loeve Transform.

Using Maple I programmed the Haar and the Walsh-Hadamard Transform, and used them to compress some simple binary images. As a preliminary investigation, I considered the effects on compression when translating, and altering the size of the images. This work is a precursor to analysing compression effects on feature extraction.

I found the assignment very useful and interesting. I have now decided that this is a good area to research in my honours year. Over the next year, I will continue to research the methods of feature extraction in biometrics, perhaps extending the work into other biometrics, such as face recognition and iris recognition.

It was a great experience presenting my work at the Big Day In. This gave me a good feel of what it would be like to attend a conference. I would like to thank AMSI for supporting me and my supervisor Assoc. Prof. Boztas for his help and guidance over the past 8 weeks.