

Research Statement / Statement of Purpose

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Abstract

Statement of Purpose should be a summary of your academic and professional goals, as well as a description of the research work you have done in your past, and what research work you plan to do as a graduate student at UT.

My first research experience is after my sophomore year when I had enough fundamentals to have an interest in research. I have worked, in team of three on a transform called Fractional Fourier Transform (FrFT). Our problem was to give a proof/algorithm to estimate parameters of a given chirp signal. We have spent considerable time understanding the transform and how to discretize this transform for fast implementation. It turns out that discretizing this transform is not so straightforward as discretizing standard Fourier transform to DFT. There are many discretizations available and not all elegant properties of continuous FrFT are satisfied by each. We chose a discretisation which preserves properties relevant to our problem and still $O(n \log n)$ to compute. We then gave an algorithm in discrete domain using this discretisation and proved its correctness.

too specific? Too big may be

I've had a chance to attend and give a presentation in Indo-European winter academy on Optoelectronic emitters. Each participants did something. I also got chance to attend CUHK school on Info Theory. This interested me the most.

of course polish all this. think of this is as a outline.

I took a grad level course in Information and coding theory. I've done a independent project on implementing sum product algorithm for decoding LDPC codes and LZW compression algorithm. While implementing later, I learnt a lot about error correcting codes and areas where this algorithm is relevant.

It made me choose an intern in multilevel coded modulation for coherent optical modulation schemes. I simulated the whole system in MATLAB. DSP part was interesting.

too cheesy?

really?