
Background:
So far industry has been getting exclusive licenses to use radio spectrum from governments (regulators), usually after an expensive auction. However, as the available radio spectrum is getting scarce, different new approaches for sharing spectrum are being proposed. This might mean, for example, sharing the spectrum between military radars and industrial internet devices so that radars are not harmed in the areas where they are active. This is a powerful new idea, but it is also causing challenges for electrical engineers. One of the problems is that we have to be more careful with our interference analysis and management. One idea is to replace the worst-case analysis with risk-aware approaches. Thus we are not seeking 100% certainty for no-interference, but ask new questions like “under what conditions wireless device can operate but will not harm other devices in 99.7% of the cases”. This might sound as an easy change, but it requires a lot of new thinking.

Tasks & Tools:
In this thesis you will learn to use a state-of-the-art interference estimation tool called SEAMCAT that is used by industry and government regulators. After learning to use the tool, you will then apply it to enable richer evaluation of the risk-benefit tradeoffs between radio systems sharing the same or nearby frequency bands. You will have an excellent opportunity to learn deeply not only about interference and coexistence issues in wireless systems, but also about critical telecommunications policy questions.

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