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**Erin Wolf Chambers\*** ([erin.chambers@slu.edu](mailto:erin.chambers@slu.edu)), Department of Computer Science, Ritter Hall, Saint Louis University, 220 N. Grand, Saint Louis, MO 63116. *Burning the Medial Axis*.

The medial axis plays a fundamental role in many shape matching and analysis, but is widely known to be unstable to even small boundary perturbations. Methods for pruning the medial axis are usually guided by some measure of significance, with considerable work done for both 2 and 3 dimensional shapes. However, the majority of significance measures over the medial axis are locally defined, and hence are unable to recognize more global topological features, or are difficult to compute and sensitive to perturbations on the boundary. In this talk, I will present recent work done in 2d and 3d to compute a new significance measure on the medial axis, which we call the burn time function. Using this function, we are able to generalize the classical notion of erosion thickness measure over the medial axes of 2D shapes. We demonstrate the utility of these shape significance measures in extracting clean, shape-revealing and topology-preserving skeletons in 2 and 3D which are robust to noise on the boundary. To conclude, I will also discuss applications of this work in ongoing research to quantify the shape of root systems, in order to identify genetic structures that govern root development. (Received September 13, 2018)