

**Suzan Köknar-Tezel**, Visiting Instructor  
*Shape Modeling and Semantics*



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### **Research Statement**

I am currently a Ph.D. student at Temple University in the department of Computer and Information Sciences. My advisor is Dr. Longin Jan Latecki.

My research areas are time series classification, sequence matching, and partial shape matching. A time series is a sequence of data points (real numbers), measured over time. Some data are natural time series, (e.g. hourly temperature, ECG data, stock prices) and some data can be transformed into a sequence of real numbers imitating a time series (e.g. using the curvature of each point in a shape contour). Classification is an important part of time series/sequence analysis. For example, if there is a database of ECGs where each is classified as normal or abnormal, a new patient's ECG can be tested against this database to immediately classify it as normal or abnormal.

In my current work I am testing different algorithms to correctly classify both natural time series and created time series/sequences. One of the applications that is very exciting is using parts of contour shapes to identify all similar shapes in a database. First we convert the shape contours to sequences of real numbers and then we use our new algorithm Optimal Subsequence Bijection (OSB) to find all similar shapes. How to best convert the shape to a sequence of real numbers is another area that I'm working on.

We used the OSB algorithm to enter the "Workshop and Challenge on Time Series Classification" at the Thirteenth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining in August 2007. We were in fourth place and received an Honorable Mention. Our paper, Sequence Matching Capable of Excluding Outliers was published in the proceedings of the workshop and I went to San Jose, CA to present it at the workshop.

Another paper, Optimal Subsequence Bijection, was accepted at the top conference in data mining, The IEEE International Conference on Data Mining, which was held in October 2007. I went to Omaha, NE and presented the paper.