# THE UNIVERSITY OF CHICAGO

## Department of Statistics
## DISSERTATION PROPOSAL

## LIZHEN NIE

Department of Statistics
The University of Chicago

## Nonparametric Change Point Detection

WEDNESDAY, November 4, 2020, at 1:30 PM
ZOOM Meeting

## ABSTRACT

Change point detection has become increasingly important for many fields, such as genetics, geophysics and finance. With the increasing abundance of high-dimensional or non-Euclidean data in modern applications, our focus is on nonparametric change point detection methods. We will present methodology that addresses both problems of interest, the testing and the localization of change points in the distribution of a time-ordered sequence of observations. The proposed statistics rely only on quantifying a distance or a similarity measure between observations in the sequence. We derive the asymptotic distribution of the proposed statistics under the null, and investigate their power under various alternatives. Time permitting, we will discuss proposed future research on related problems that address gradual change scenarios, and the detection of anomalies.