Author: Chen, Guiling
Title: A fixed point approach towards stability of delay differential equations with applications to neural networks
Issue Date: 2013-08-29

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Notational conventions

Here we state some conventions regarding mathematical notation that we will use in this thesis.

- Denote by $\mathbb{R} = (-\infty, \infty)$, $\mathbb{R}^+ = [0, \infty)$, $\mathbb{Z}^+ = \{1, 2, 3, \cdots\}$.
- For any positive integer n, R^n denotes the set of all n-tuples of real numbers forms an n-dimensional vector space over R.
- $R^{m\times n}$ denotes the set of real $m \times n$ matrices.
- A^T denotes the transpose of matrix A.
- $Re(a)$ denotes the real part of the complex number a.
- $\lambda_d(A)$ denotes dominant eigenvalue of matrix A.
- $diag(d_1, d_2, \cdots d_n)$ denotes a diagonal matrix.
- $C([a, b]; \mathbb{R})$ denotes the space of continuous, real-valued functions on $[a, b]$.
- $C([a, b]; \mathbb{R}^n)$ denotes the space of continuous, $\mathbb{R}^n$-valued functions on $[a, b]$.
- $C([a, b]; X)$ denotes the space of continuous, X-valued functions on $[a, b]$.
- $BC([a, b]; X)$ denotes the space of bounded continuous, X-valued functions on $[a, b]$.
- $L_2[0, \infty)$ denotes the space of square-integrable functions on $[0, \infty)$.
- $(\Omega, \mathcal{F}, \mathbb{P})$ denotes a probability space, where Ω is the collection of all possible outcomes, and $\mathcal{F}$ is the set of all events A to which a probability $\mathbb{P}(A)$ can be attached. $\mathcal{F}$ is $\sigma-$algebra, and $\mathbb{P}$ a probability measure.
- $\mathbb{E}$ denotes expectation with respect to the probability measure $\mathbb{P}$.