

# Основы научных исследований

направления подготовки магистратуры

13.04.01 «Теплоэнергетика и теплотехника»

13.04.02 «Электроэнергетика и электротехника»

13.04.03 «Энергетическое машиностроение»

**Практическое занятие № 3**

ассистент кафедры ЭсПП

Коваленко Дмитрий Валерьевич

**Тема 4. Поиск научных статей и монографий в  
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13.06.17 - 6-я Международная школа для молодых ученых International Workshop on Smart Nanomaterials-IWSN 2017 в Ростове-на-Дону

3.06.17 - Международная конференция "BIOINFORMATICS: FROM ALGORITHMS TO APPLICATIONS" ("Биоинформатика: от алгоритмов к применению").

2.06.17 - Опубликованы показатели CiteScore 2016 и CiteScore Tracker 2017

5.05.17 - Еще один российский университет выбрал Pure для учета и управления своими научными данными

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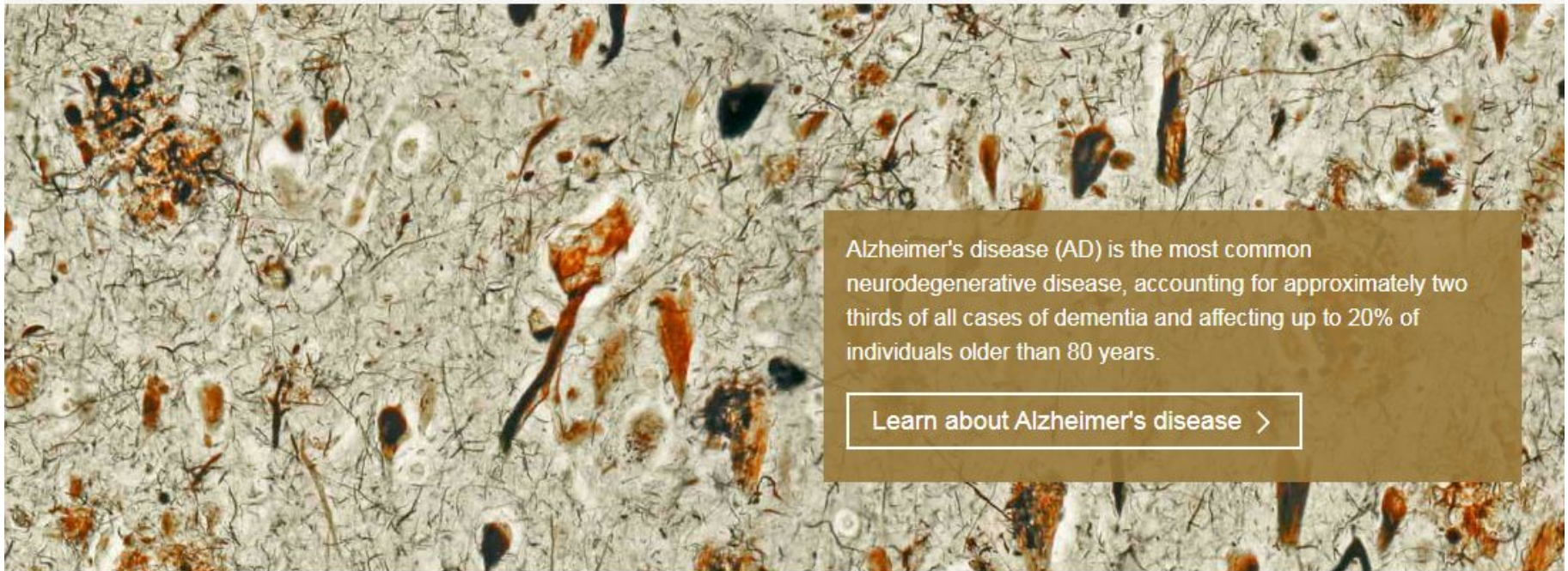
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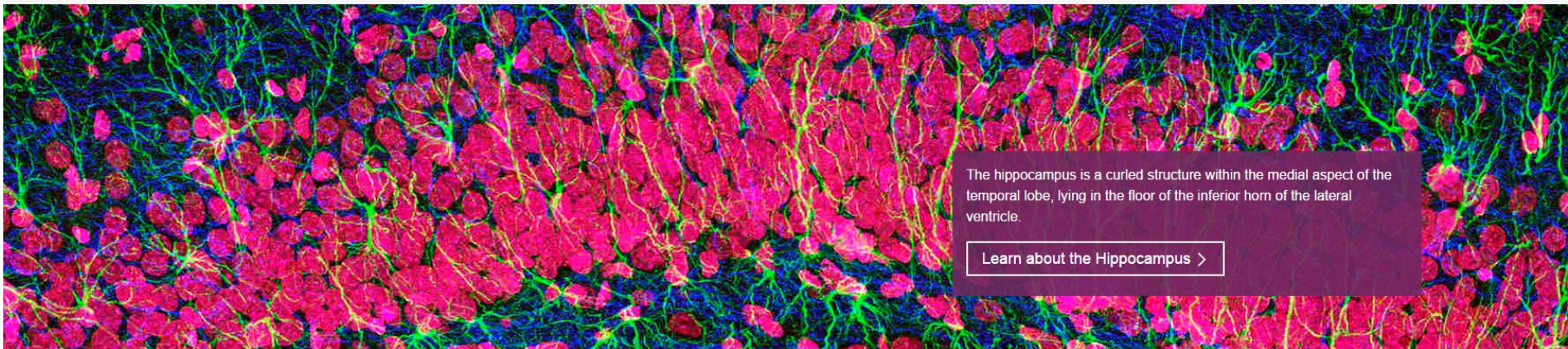
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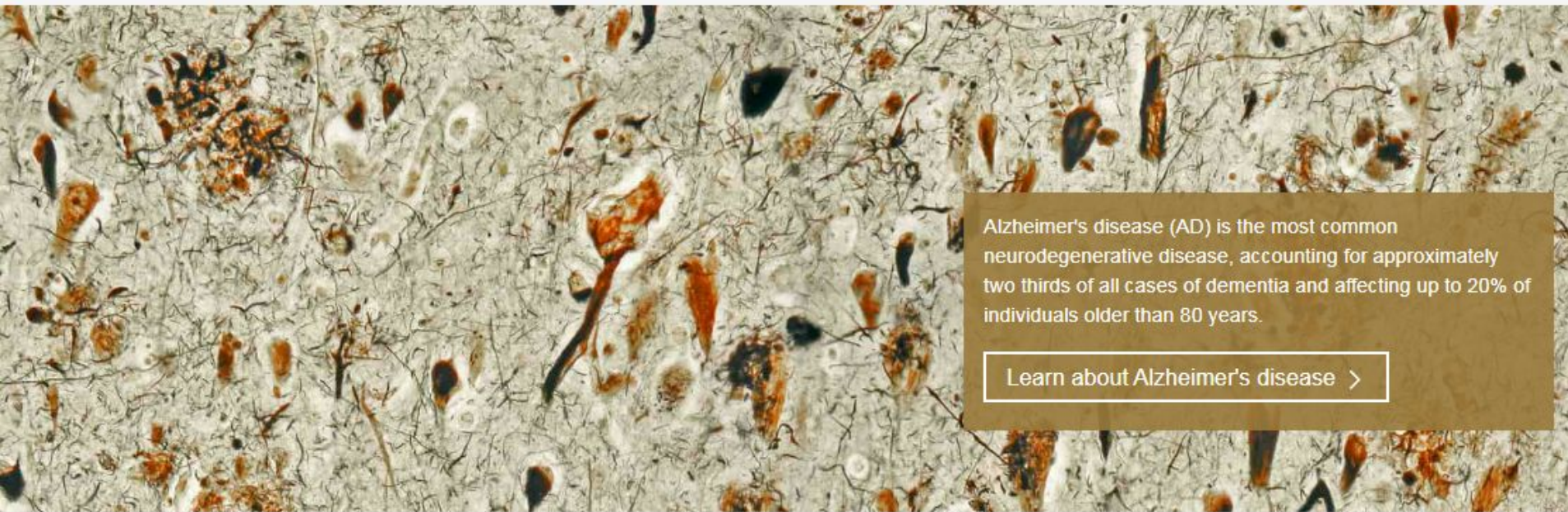
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Minimizing **harmonic** distortion in **power system** with optimal design of hybrid active **power** filter using differential evolution

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## Minimizing harmonic distortion in power system with optimal design of hybrid active power filter using differential evolution

Partha P. Biswas <sup>a</sup> , P.N. Suganthan <sup>a</sup> , Gehan A.J. Amaratunga <sup>b</sup>

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Hybrid active power filter (HAPF) is an advanced form of harmonic filter combining advantages of both active and passive filters. In HAPF, selection of active filter gain, passive inductive and capacitive reactances, while satisfying system constraints on individual and overall voltage and current harmonic distortion levels, is the main challenge. To optimize HAPF parameters, this paper proposes an approach based on differential evolution (DE) algorithm called L-SHADE. SHADE is the success history based parameter adaptation technique of DE optimization process for a constrained, multimodal non-linear objective function. L-SHADE improves the performance of SHADE with linearly reducing the population size in successive generations. The study herein considers two frequently used topologies of HAPF for parameter estimation. A single objective function consisting of both total voltage harmonic distortion (*VTHD*) and total current harmonic distortion (*ITHD*) is formulated and finally harmonic pollution (*HP*) is minimized in a system comprising of both non-linear source and non-linear loads. Several case studies of a selected industrial plant are performed. The output results of L-SHADE algorithm are compared with a similar past study and also with other well-known evolutionary algorithms.



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Revised date: 7-7-2017  
Accepted date: 15-8-2017

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