PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 35th cycle

Research Area n. 4 - Telecommunications

Research Field: ADVANCED TECHNIQUES FOR THE MAPPING OF ACOUSTIC SOURCES

<table>
<thead>
<tr>
<th>Monthly net income of PhD scholarship (max 36 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>€ 1250.0</td>
</tr>
</tbody>
</table>

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

**Motivation and objectives of the research in this field**

Interdisciplinary PhD Grant
The PhD research will be carried out in collaboration with research groups of the PhD programme in "Mechanical Engineering".

The interest in noise reduction is increasing in several industrial areas: automotive, aerospatial, railway, industrial plants to mention some. As a consequence, an ever growing number experimental techniques and methodologies for noise and vibration analysis is proposed. The goal of the proposal is to develop innovative methodologies for the mapping and characterization of acoustic sources, with particular reference to acoustic holography. Focus will be placed on the effectiveness of the proposed methods, both in terms of accuracy and of computational burden.

**Methods and techniques that will be developed and used to carry out the research**

The research area of acoustic analysis is by its nature interdisciplinary. During the activity, the PhD student will have to investigate and deepen both theoretical aspects of acoustics, but also with problems that are typical of numerical analysis and signal processing, and also with numerical modeling of vibroacoustics. During the studies, the PhD student has access to the laboratories of the
## Educational objectives

The research pursued during the studies will offer the possibility of acquiring an expertise in computational acoustics, and in particular on sound field analysis, sound source localization, plenacoustic sound field processing, near-field holography under an interdisciplinary approach, including acoustic and signal processing.

## Job opportunities

The expertise acquired during the PhD grants access to a variety of job opportunities, among which it is worth mentioning noise reduction for industrial plants, design of systems for active noise reduction and control, musical acoustics, etc.

## Composition of the research group

- 2 Full Professors
- 1 Associated Professors
- 3 Assistant Professors
- 7 PhD Students

## Name of the research directors

Augusto Sarti, Roberto Corradi

## Contacts

**Augusto Sarti (DEIB)**
https://www.deib.polimi.it/ita/personale/dettagli/61414
augusto.sarti@polimi.it
phone number +390223993444

**Roberto Corradi (DMEC)**
https://www.mecc.polimi.it/ricerca/personale-docente/personale-docente/prof-roberto-corradi/
roberto.corradi@polimi.it
phone number +390223998493


## Additional support - Financial aid per PhD student per year (gross amount)

<table>
<thead>
<tr>
<th>Housing - Foreign Students</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500.0 € per student</td>
<td>1000.0 € per student</td>
<td>1000.0 € per student</td>
<td></td>
</tr>
</tbody>
</table>

max number of financial aid available: 2, given in order of merit..

| Housing - Out-of-town residents (more than 80Km out of Milano) | -- |

EDUCATIONAL ACTIVITIES (purchase of study books and material, including computers, funding for participation in courses, summer schools, workshops and conferences):
2nd year: euros per student (1534)
3rd year: euros per student (1534)

TEACHING ASSISTANSHIP: There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.

COMPUTER AVAILABILITY:
individual use

DESK AVAILABILITY:
individual use

List of publications:

For Wave Field Processing”. IEEE Tr. on Signal Processing, Vol. 64, No. 21, Nov. 2016, pp. 5696-5706
