



INTERNSHIP PROGRAM FOR INTERNATIONAL STUDENTS

INTERNSHIP SUBJECT FORM



Name of the Host Laboratory	Computer Science Lab (LIX), Ecole Polytechnique
Website of the Host Laboratory	https://www.epizeuxis.net
Research Group	Epizeuxis Network Research Group
Internship Supervisor	Jiazi Yi jiazi.yi@polytechnique.edu
Internship Subject	A study of Low-Power Wide-Area Networks (LPWAN) for Internet of Things
Student's level	<input checked="" type="checkbox"/> Advanced Undergraduate Students (3 rd or 4 th year) <input checked="" type="checkbox"/> Master's students (1 st or 2 nd year) <input checked="" type="checkbox"/> PhD students
Proposed Duration	<input checked="" type="checkbox"/> 3 months <input checked="" type="checkbox"/> 4 months <input checked="" type="checkbox"/> 5 months <input checked="" type="checkbox"/> 6 months
Prerequisites	Major in computer science, network engineering, communication, electrical engineering or related fields. Good understanding and experiences in communication/network protocols, network simulation, programming (especially C/C++, Python).
Internship description (max. 15 lines)	<p>Low-Power Wide-Area Networks (LPWANs) are networks connecting resource-constrained (low-power) devices over a wide area (with links up to several km long) with low-bandwidth connectivity, and for relatively low traffic rates. Large wireless sensor networks at urban or metropolitan scale or long-term monitoring deployments are examples of LPWANs — these are thus the natural framework for the Internet of Things. Since LPWANs involve features and constraints that are not typically addressed in classic wireless networking technologies (e.g. Wi-fi, cellular), new technologies are being proposed and developed to support IoT deployments, some examples being LoRa or SigFox.</p> <p>The internship aims at:</p> <ul style="list-style-type: none"> • Building a test LoRa network on the campus of Ecole Polytechnique • Quantifying LoRa technology by way of experimental measurements, in particular focusing on its transmission range, throughput/capacity, power consumption, MAC protocol performance, etc. • Based on the measurements and observations obtained, proposing and evaluating new mechanisms to improve the performance of LoRa and adapt its operation to new IoT applications. <p>To apply or for further information, please contact the internship supervisors.</p>