

CIOMP Summer Internship Positions

No.	Position Description	Requirements
1	<p>Topic: Gravitational Wave Detection in Space</p> <p>Task:</p> <p>1. Picometer magnitude ultra-stable telescope: materials; stability measurement based on interferometry.</p> <p>2. Gravitational Reference Sensor: Capacitive sensing and actuation; Grapping, Positioning and Release Mechanism; torsion pendulum; Data analysis.</p>	<p>Compulsory courses: Gaussian optics, Interferometry, Circuit design, Mechanics, Weak force measurement.</p> <p>Experience: studying or working experience relevant to above work</p> <p>Duration: 12 weeks</p>
2	<p>Topic: Design of Gradient coils in MRI</p> <p>Task: Using the numerical optimization method to design the novel layout of gradient coils used in the magnetic resonance imaging (MRI)</p>	<p>Compulsory courses: finite element method, numerical optimization</p> <p>Experience: basic background knowledge about electromagnetic field and Maxwell equation</p> <p>Duration: 8~12 weeks</p>
3	<p>Topic: Design of passive type lab-on-chip devices</p> <p>Task: Using the numerical optimization method to design the novel layout of microfluidic channels which can be used as functional units in Lab-on-chip devices</p>	<p>Compulsory courses: finite element method, numerical optimization</p> <p>Experience: basic background knowledge about hydraulic theory, fluidic dynamics</p> <p>Duration: 8~12 weeks</p>
4	<p>Topic: Design of photonic crystal devices using the transformation optics method</p> <p>Task: Using the transformation optic method to design the pseudo-periodic Photonic crystal devices</p>	<p>Compulsory courses: finite element method, numerical optimization</p> <p>Experience: basic background knowledge about physical optics</p> <p>Duration: 8~12 weeks</p>
5	<p>Topic: The Study of A Novel Self-Powered Micropump for Programmable and High-Throughput Droplet Generation</p> <p>Task: A theoretical micropumping formula will be developed here, to provide a sound theory for assisting in the key milestone of realizing, predicting and manipulating self-generated microdroplets inside microdevices. In addition, the equilibrium, droplet-size and throughput of self-automated microdroplets will be analyzed as afunction of the geometry of the microfluidic channels, the length of the</p>	<p>Compulsory courses: No requirement</p> <p>Experience: No requirement</p> <p>Duration: 8~12 weeks</p>

	<p>outletsilicone tube, and operation parameters such as pressure and flux.</p> <p>The characterization and theoretical modeling of homogeneous generation and transport of self-activated water-in-oil microdroplet, will be helpful for wide range of related communities (e.g., physics, biology, chemistry and mechanical, etc.) in their emerging fields relying on droplet-based studies, such as single cell culture, chemical kinetics, BEAMing, nanoplates analysis, single DNA isothermal/thermal-cycled PCR and protein crystalition, etc.</p>	
6	<p>Topic: We are seeking talented applications who have strong interests in Image Processing. One or more of the following areas: Software Engineering, Machine Learning, Deep Learning and Target Detection.</p> <p>Task: Define, design and build algorithms under our guidance.</p>	<p>Compulsory courses: C/C++ language is needed. Digital Image Processing is expected but not required.</p> <p>Experience: Proposer is supposed to have a good command of C/C++ language, software designing experience is expected but not required.</p> <p>Duration: 8~12 weeks (The longer the better)</p>
	<p>Topic: Artificial Intelligence; Robot; Deep Learning; Image Processing;</p> <p>Task: Write C/C++/Python code to solve these problems in a Robot Project: Objects/Scene/Speech Recognition; Objects/Stuff Segmentation; Robot Controls; Etc.</p>	<p>Compulsory courses: C++ Programming Language; basic math courses;</p> <p>Experience: i)Solid programming skills; ii)Proficient in C/C++ or Python Development; iii)Familiar with any famous Deep Learning Frameworks (Caffe/ TensorFlow/ Darknet/ MXNet...); iv)Familiar with OpenCV and other Frequently used C++ libraryor Skills is preferred (boost/zlib/OpenMP/CUDA/OpenCL...)</p> <p>Duration: 12 weeks (The longer the better)</p>
7	<p>Topic: The effect of fine physical/optical alignment on images quality</p> <p>Task: Nowadays, the multi-sensor systems have been widely used in the field of image enhancement and virtual reality, e.g. the Huawei P9 mobile-phone and panoramic camera. Huawei P9 has two cameras, one is colorful and the other one is monochrome. The two cameras are combined to enhance the</p>	<p>Compulsory courses: Image processing</p> <p>Experience: No requirement</p> <p>Duration: 8-12 weeks</p>

	<p>image quality. The panoramic cameras normally have numbers of cameras (>2), which can be mosaicked to form a panoramic image. Especially for the stereo panoramic camera, the physical/optical alignment is necessary for the images quality.</p> <p>In these applications, the physical/optical alignment of multi-cameras has significant effect on the images match from different cameras. So this task is to figure out how to measure and judge this effect.</p>	
8	<p>Topic: Research on optical design for large-FOV light-field camera</p> <p>Task: The light-field camera is considered as the advanced optical system to capture the 4D light information and reconstruct the light field, which has significant value for the virtual reality. However, the current light-field camera, such as Lytro, has a key problem for the small FOV (field of view).</p> <p>To enlarge the FOV, not only the optical system needs to be designed, but also the image algorithm. So this task is to develop the image algorithm for the large-FOV light-field camera.</p>	<p>Compulsory courses: Computational imaging</p> <p>Experience: No requirement</p> <p>Duration: 8~12 weeks</p>
9	<p>Topic: Editor Assistant of <i>Light: Science & Applications</i></p> <p>Task:</p> <ol style="list-style-type: none"> 1.Preparation and Service of Light Conference 2.Journal promotion 	<p>Compulsory courses: None</p> <p>Experience:</p> <ol style="list-style-type: none"> 1.background of optical science and technology 2.excellent communication ability and tremendous working enthusiasm, good team working spirit <p>Duration: 8~12 weeks (The longer the better)</p>

Benefits:

1. CIOMP will cover the board and lodging cost on the campus (offers the students dormitory to the interns for free; offers the meals in the Students Canteen for free, there is no Muslim food and special vegetarian diet).
2. CIOMP would support each intern 3000 RMB per month allowance (before tax).
3. CIOMP will appoint a supervisor for each intern.

Obligation:

1. The interns come to CIOMP need to cover the air tickets cost between China and the countries they come, as well as the city transportation (such as Beijing-Changchun-Beijing).
2. The interns shall buy the insurance (which would be effective during the interns stay in China) by themselves.
3. The interns shall obey the Chinese law.
4. The interns shall obey CIOMP regulations.
5. The interns shall not disclose any information regarding to third parties without specific authorization.
6. The interns should follow the CIOMP supervisors' instructions.
7. CIOMP shall evaluate the intern's activity at the end of the internship.
8. CIOMP shall inform the University or the guardians immediately in case of any accident occurred to the intern.

Application Deadline: May 10, 2018 (*send application and CV by email*)

Attachment documentation: *CIOMP Summer Internship Application Form*

Contact Person: Mr. ZHANG Lingtong

Email: zhanglingtong@vip.163.com

Telephone:+86 13578779733(wechat ID)

International Cooperation Supervisor

Associate Professor

International Cooperation Division

CIOMP

CIOMP Summer Internship Application Form

1. First Name:

2. Last Name:

3. Nationality:

4. Profession:

5. University:

6. Position to apply:

7. Passport Information

No.:

Date of Issue:

Date of Expire:

8. Birth Date:

9. Gender:

10. Internship Duration:

11. Email Address:

12. Emergency Contact Person

University Contact Person: *name and phone No.*

Guardians (parents): *name and phone No.*