Expectations & First experiences

Dear Professor, I am Yuzhou Chen, a post-graduate student taking part in the Sandwich Program to study for the MSc AGI program. At my undergraduate stage, I majoring in GIS and was lucky to choose one of the classes, The Basic Principles of GIS, lectured by my supervisor. Since then, I have gradually learned about GIS, DEM, and get to know that we can do a lot of research related to GIS, also trying to get access to some resources and issues about Digital Terrain Analysis(DTA), which is exactly what our lab mainly works with now. Soon I was recommended to further my study in my senior year of bachelor, so that I was able to carried out and continue some research works under the guidance of my supervisor.

o **What was your original expectation before starting the MSc AGI?**

Before receiving the letter of admission concerned with the MSc AGI program from Z\_GIS, University of Salzburg, my expectation on my studies at the MSc AGI program fell into several categories. As is mentioned in my motivation letter, I am a person who is passionate about expanding my knowledge. So to learn something new is of the top priority for me while studying in Applied Geoinformatics. My undergraduate GIS program is divided into several directions, and what I majored in is *GIS Theory and Methods*, which mainly introduces the basic theories, analytical methods and application examples of GIS, and I have a relatively shallow understanding of the GIS-related technologies in the Web domain and mobile application development projects. According to my personal development requirements, I have learned C, python and other programming languages, and through self-study to improve, so that I have a certain programming foundation. But this is not enough for my future development. Therefore, before participating in the MSc AGI program, I had already planned my course selection preferences, and I wanted to supplement my shortcomings through my study in Salzburg by mastering GIS services in web scenarios, GIS application development and visualization methods, and by learning related programming languages to enhance my skills. Secondly, I would like to be exposed to more scientific information through the platform of the University of Salzburg, including original books, more complete English literature and the most relevant and cutting-edge ideas in the research field of our group. Thirdly, I would like to participate in the paper writing courses, especially in the field of GIS, so that I can improve my English paper writing skills through the coursework and the reading of English literature. In my opinion, English paper writing is very different from the papers written in our own language in terms of thinking, language expression and mapping methods. For me who lacks experience in English paper writing, I need to accumulate and learn from my writing experience and seek guidance from scholars with similar research interests. Last but not least, through studying in Salzburg, I was able to relieve some of my pressure and take advantage of the freshness to rejoin my study and work efficiently in the new environment. At the same time, I also realize that English expression is definitely a problem, so I hope to train my English listening and speaking skills through continuous English communication with others during the MSc AGI program, so that I can overcome my anxiety and regulate my daily life. I will also try to understand the requirements for employment in the GIS field abroad to provide new possibilities for career development.

在我收到萨尔茨堡大学的邀请函之前，我对在MSc AGI的学习的期待体现在诸多方面。其中最为首要（take the top priority）的一点是，我希望能够通过在应用地理信息专业交流学习的过程中，学习一些以往本科学业中未曾涉及的内容。就如我在动机信中所提到的，我是一个热衷于拓展自身知识面的人。我本科阶段的GIS专业培养方案分为多个方向，我选择的（what I majored in）方向是GIS理论与方法，主要是介绍GIS的基础理论、分析方法和应用实例的，而对GIS相关技术在Web领域和移动端的应用开发项目了解较为浅薄。当然，我也依据我的个人发展要求，选学了C、python等编程语言，并通过自学加以精进，使自身具备了一定的编程基础。但这对我的未来发展而言还远远不够。因此在参与MSc AGI项目前，我已经规划了自己的选课偏好，想要通过在萨尔茨堡的课业学习，补充自己的知识短板，掌握在Web场景中的GIS服务、GIS应用开发和可视化方法，学习相关编程语言，提升自身技能的广度。第二，我希望通过萨尔茨堡大学这一平台，接触到更多科研讯息，包括原版图书、更齐全的英文文献和本课题组研究领域最相关、最前沿的观点。第三，我想参与论文写作的相关课程（特别是GIS领域），通过课业学习和英文文献阅读，能够提升自身的英文论文写作水平。就我看来，英文论文的写作在思维方式，语言表达和制图方法上都与中文论文有很大差异，对于缺乏英文论文写作经验的我而言，需要积累和借鉴写作经验，并在论文写作上寻求相似研究方向的学者的指导。第四，我可以通过在萨尔茨堡的学习，我能够纾解一部分的压力，趁新鲜感在新环境中重新投入高效的学习和工作中。同时，我也意识英文表达definitely是一个问题，因此我希望通过在MSc AGI项目学习过程中持续的英文交流，来训练自身的英语听说能力，以此来克服焦虑情绪，规律自己的生活作息。我也会尝试去了解国外GIS领域就业的要求，为职业道路的发展提供新的可能。

o **Has this expectation become true or is the reality in Salzburg different and, if so, how?**

During the first month of studying and living in Salzburg, I think that almost all my expectations were able to be fulfilled. However, it may still take me some time to learn and understand more deeply about the city of Salzburg and the MSc AGI program. First of all, Z\_GIS provides us with a comprehensive and reasonable course structure, which includes some courses involving GIS development and application, such as basics of software development, spatial simulation, IP: Application Development, etc. Selecting these courses is in line with my original intention to improve my GIS-related programming skills. Of course, other specialized courses are also full of challenges, which lies in the stage of English presentation or introduction. When it comes to the accessibility of research resources, Z\_GIS provides us with a multi-channel platform for accessing resources. One of the most direct ways is that I got to know many knowledgeable lecturers, and reading their published articles became an important part of my daily work, which enabled me to gain a deeper understanding of their research fields instead of just acquiring knowledge from the coursework. Through reading, I also realize that some scholars are working on machine learning, deep learning, and related topics, which arouses my interests. At the same time, our school also provides us with many quality research aids, such as online/offline libraries, 1-year access to office 365 and a license to use ArcGIS Online. After using office 365, I think that it is beneficial for time planning, task execution and planning, faculty/student communication, and synchronization of information on course platforms. However, I was still confused at times when I was first introduced to this work pattern, because I am not familiar with alternating between outlook, MS teams and blackboard platforms, and sometimes I will be a bit overwhelmed when I am faced with a large number of emails, which does need some time to get familiar with. Thanks to Z\_GIS for providing us with a license for the ArcGIS Online platform, which has a full range of map services and access to online resources such as study groups, maps, training courses, living atlas, etc. When it comes to the improvement of my English When it comes to the improvement of my English paper writing, I enrolled in the course called *Scientific Methods & Writing*, I believe that after the guidance of lectures and corresponding homework training, my English paper writing can be improved. Apart from the studies, in my social and living life, I feel that Salzburg has helped me a lot. Salzburg is a really beautiful city with a quiet and refreshing atmosphere, which relieves me from the accumulated stress, and allows me to settle down and keep my mind active without too much distraction, since most of the work plans are organized and can be carried out in an orderly manner. I was also fortunate enough to meet classmates from all over the world, such as Austria, Bulgaria, Germany, Armenia, etc. They are happy to shared their attitudes and ideas toward life and studies with us, which is always surprising and eye-opening. I am also glad to be able to participate in many parties or hiking activities organized not only by PLUS, but also by student dormitories and student unions, which provide us with opportunities to learn about the local culture. In contrast, my past research and life was slightly stressful, which sometimes prevents me from generating new research ideas. Despite the pressures of studying at MSc AGI, I believe that I will be able to strengthen my self-discipline during this valuable period of time, leaving more time for study and self-improvement, and adjusting my irregular routine in life.

经过了在萨尔茨堡近1个月的学习和生活。我认为，几乎我所有的期望都能够在萨尔茨堡的学习中得到了满足。但要对萨尔茨堡这座城市和MSc AGI项目有更深入的了解，我仍需要一段时间的学习和感受。首先，Z\_GIS为我们提供了全面、合理的课程结构，这其中包括一些涉及GIS开发和应用的课程，如basics of software development、spatial simulation、IP: Application Development等，选择这些课程进行学习，与我提升自身GIS相关编程技术的初衷相符合。当然，其他专业课也充满了挑战，which lies in 阶段性的英文汇报。谈到研究资源的可获取性，Z\_GIS为我们提供了一个多渠道的资源获取平台。其中最为直接的途径是，我认识了许多学识渊博的lecturer，于是研读他们发表的一些文章也成为了我日常工作的重要部分，这使得我能够更加深入地了解其研究方向，而非仅仅获取有限的课业知识。通过阅读，我也了解到有人在从事机器学习、深度学习等领域的研究，这是我所感兴趣的研究方向。同时，学院也提供了许多优质的研学辅助工具，如在线/线下图书馆，1年的office 365使用权和ArcGIS Online的使用许可，可以说，office 365对于时间规划、任务执行与规划、师生交流和课程平台信息同步都有益处。但在初次接触这一工作模式时，我有时仍会感到困惑。我对交替使用outlook，msteam和blackboard平台还不熟悉，有时在面对大量邮件时也会有些不知所措，这确实需要一个适应的过程。感谢z\_gis为我们提供了ArcGIS Online平台的许可证，具备学习小组、maps、training courses、living atlas等齐全的地图服务和在线资源访问能力。When it comes to the improvement of my english paper writing, 我注册了名为scientific methods&writing的课程，我相信在经过老师的指导和对应的作业训练后，我的英文论文写作水平能够得到提升。不仅仅在学习上，我发现在社交和生活方面，萨尔茨堡这座城市也为我提供了不小的帮助。萨尔茨堡是个美丽的城市，这种安静和新鲜的环境确实缓解了我积累的压力，使我有时间能够安定下来，并使我的思维活跃而不会受太多外界消息的干扰和影响。（因为大多数工作计划都是被安排好的，可以有条不紊地进行）我也有幸接触到了来自世界各地的同学，比如奥地利，保加利亚，德国，亚美尼亚等。他们与我们在生活态度和思想观念上存在一些差异，这是的我们的交流总是充满了惊喜，也让我开拓了眼界。我也很高兴能够参与许多不仅是由PLUS，也可能由学生宿舍、学生联盟举办的party或hiking活动，这些活动为我们提供了了解本地文化的机会。相比之下，我过去的科研和生活整体则略显枯燥和紧张。尽管在MSc AGI的学习中也面临着压力，但我相信我能够在这段宝贵的时间里加强自律，余留更多时间在学习和自我提升上，并调整我过去不规律的作息方式。

**o What was the focus in your previous study and how is this related to the MSc AGI?**

My previous work focused on the study of DEM data and DTA methods. One of the fields of my research is soil erosion on the Loess Plateau. Some regions in our country are suffering from severe soil erosion in the past few years. In order to reduce the intensity of soil erosion, we have tried many ways to solve this problem. Some people found that, terrace farming has become a good way to conserve soil and water. I am trying to quantitatively evaluate the impact of these terracing projects on soil conservation, based on RUSLE model and high-resolution DEM. I want to publish a paper on this research, but I know that just calculate the changes on soil erosion is not enough. By reading some paper related to my study, I noticed that the morphology of terraced fields and the type of vegetation may influence the result, so I should take more factors into account and further my research in the future. Another study I am working on is based on the DTA methodology. As is shown in the motivation letter. This research idea was originated from the geomorphic classification research in the DDE project. And the experimental area are located in the west Australia land, which contains thousands of linear dunes differ significantly from common sand dune landforms elsewhere. Unlike relatively flat depositional substrates commonly seen domestically, regions like the Great Sandy Desert (GSD) in Australia exhibit gentle hills and low mountain-like forms as the terrain base. Therefore, I am attempting to design a model called VoSG-SDA to solve this problem. Both studies are based on terrain analysis methods and are closely related to the *Methods in Spatial Analysis* in the MSc AGI program. In addition, during my undergraduate studies, I was exposed to the Lisflood-FP model, a simulation model for large-scale watershed floodplains developed at the University of Bristol, UK. In collaboration with other fellow students, I selected the Huaihe River Basin in China as the study area and proposed to study the population's exposure to floods of simulated intensity in this basin based on the Lisflood model, using the DEM and the population distribution raster as the base data. I am mainly responsible for the operation part of the model. This research is closely linked to the GIS programming and visualization methods in the MSc AGI program and has some relevance to the spatial simulation course. In the spare time of conducting the above research, I also spent 1 month to learn the basic theory of deep learning, the process of mathematical formula derivation and the python deep learning implementation scheme based on package named Pytorch. Through self-learning, I used a general understanding of deep learning principles and applications and began to focus on the available areas of deep learning methods. Considering my mentor's suggested research direction is geomorphology + cities, I would like to integrate the above with deep learning methods to explore new applications. The above learning content is related to the digital earth citizens project in the MSc AGI program, and some researchers in Z\_GIS are also exploring the cutting-edge applications of deep learning, I am hoping to gain the opportunity to communicate with related researchers through my study in Salzburg, so as to open up my research ideas in related fields.

我先前的工作主要聚焦于DEM数据和DTA方法的研究。我研究的第一个方向是黄土高原的土壤侵蚀。Some regions in our country is suffering from severe soil erosion, in order to reduce the intensity of soil erosion, we have tried many ways to solve this problem. Some people found that, terrace farming has become a good way to conserve soil and water. I am trying to quantitatively evaluate the impact of these terracing projects on soil conservation, based on RUSLE model and high-resolution DEM. I want to publish a paper on this research, but I know that just calculate the changes on soil erosion is not enough, by reading some related studies, I noticed that the morphology of terraced fields and the type of vegetation may influence the result, so I should take more factors into account and further my research in the future. 另一个正在进行的研究是基于DTA方法进行的。As is shown in the motivation letter. This research idea was originated from the geomorphic classification research in the DDE project. And the experimental area are located in the west Australia land, which contains thousands of linear dunes differ significantly from common sand dune landforms elsewhere. Unlike relatively flat depositional substrates commonly seen domestically, regions like the Great Sandy Desert (GSD) in Australia exhibit gentle hills and low mountain-like forms as the terrain base. Therefore, I am attempting to design a model called VoSG-SDA to solve this problem. 上述两个研究都基于地形分析方法，与MSc AGI项目中的空间分析方法课程关系密切。此外，在本科的学习阶段，我还接触了英国布里斯托大学开发的lisflood模型，一种用于大尺度流域洪泛区的模拟模型。我与其他同门合作，选取了中国淮河流域为研究区域，以DEM和人口分布栅格为基础数据，提出基于lisflood模型研究该流域人口在模拟强度的洪灾发生时的受灾情况。我主要负责模型的运行部分的工作。该项研究与MSc AGI项目中GIS编程和可视化方法联系紧密，也与空间模拟课程存在一定关联性。在进行上述研究的空余时间里，我也花费1个月时间学习了深度学习的基础理论、数学公式推导的过程和基于pytorch库的python深度学习实现方案。通过自学上述内容，我对深度学习原理和应用用了大致了解，并开始关注深度学习方法的可用领域。考虑到我导师建议的研究方向是地貌+城市，我希望将上述内容与深度学习方法融合，探索新的应用。上述学习内容与MSc AGI项目中的digital earth citizens项目存在关联，并且z\_gis中部分研究者也在探讨深度学习的前沿应用，我正希望通过在萨尔茨堡的学习，获得与相关研究者交流的机会，从而开拓我在相关领域的研究思路。

**o Which parts of the MSc AGI are new for you?**

Although many of my expectations for the MSc AGI program turned become true, there were still some parts that were new to me:

1. Master softwares like outlook. In our country, communication between lectures and students is usually done through social media, which makes communication timely but exposes us to potential stress. Outlook, a fusion of an email platform and a calendaring system, allows for a more formalized notification of classes. But sometimes I get a little overwhelmed by the sheer volume of emails.
2. Opportunities to communicate with others peers from all around the world.
3. The teaching methods, learning and discussion atmosphere in class, where we can come up with some requests considering our own situation.
4. Some course patterns, like what in *Orientation and Introduction*. These courses are similar to lectures, yet interactive and challenging for us.
5. Course framework. Many courses may start straightly into the core point, not dwelling too much on theoretical explanations.
6. Access to the online platforms and maps without additional efforts.

However, at the same time, there is one thing similar to my previous study, which is pressure. In the MSc AGI program, the pressure comes from the requirements to master new knowledge and cope with the deadline of coursework. While the pressure in China mainly falls into the research tasks from research group. There is no much difference between these two kinds of stress, which only lies in the forms.

尽管我对MSc AGI学业的很多期待都变成了现实，但仍有一些部分对我来说是全新的：

1. Using softwares like outlook. 在国内，师生间的交流通常通过社交媒体进行，这尽管使得通讯变得及时，但会使我们遭受潜在的压力。Outlook, 一个邮件平台和日历系统的融合体，使得课程通知更加正规化。但有时面对繁杂的邮件，我会有些不知所措。
2. Opportunities to communicate with others peers from all around the world.
3. The teaching methods, learning and discussion atmosphere in class, where we can come up with some requests considering our own situation.
4. Some course patterns, like what in Orientation and Introduction. 这些课程是类似讲座式的，但又有互动性，同时也兼具挑战性。
5. Course framework. Many courses may start straightly into the core point, not dwelling too much on theoretical explanations.
6. Access to the online platforms and maps without additional efforts.

但同时，有一点与国内的学习是很类似的，那就是压力。在MSc AGI项目的学习中，我面临的压力是掌握新知识和应对课程作业的deadline, 而在国内，我面临的压力主要来自于组内的科研任务。二者没有轻重之分，只是有不同的表现形式。

**o Finally, what do you have in mind to do after the MSc graduation and how will this MSc qualify you for the job market ?**

In fact, in our country, some internet companies and the GIS industry and mapping industry, are experiencing some degree of downsizing, that’s why we need to be attentive to our studies. I have set a few options for myself for future work. First, to work as a web platform GIS application development engineer in an organization, I personally tend to be a back-end JAVA developer. As a current post-graduate student, I have wrapped up 4 years of learning GIS techniques and computer skills, thus having a good understanding of development work and can learn new knowledge on my own. Through courses’ guidance and self-study, I will focus on improving my back-end development skills, understanding the general requirements of full-stack development, strengthening my GIS development skills, and improving my competitive edge during my MSc AGI studies. But if I can well complete my current research and publish new papers, I will apply for a PhD and apply for the CSC study abroad program in our country to get another opportunity to go abroad. This is a choice based on the availability of academic resources, the atmosphere of academic exchanges, and the competitiveness of employment, which requires me to improve my determination and build a deep research foundation for myself. Additionally, I am sometimes considering becoming a high school teacher because I actually have the initial ability to teach high school geography subjects, which is in line with my personality because imparting knowledge is an enjoyable process for me.

So, how will this MSc qualify me for the job market? I think the most important thing is that, through this MSc program, I will supplement my basic knowledge in the field of GIS, which will enable me to have a professional knowledge system, and understand how to get access and use online map resources, and also enable me to master the secondary development of GIS applications on the web or mobile devices. At the same time, regular weekly coursework and assignments will develop my ability to acquire and process information, thus improving my stress tolerance. Nowadays, the job market not only requires competence on professional knowledge, but also relies on the information gap to differentiate the overall competence of the prospective job seekers, so the relatively heavy coursework and requirements during the MSc program will enhance my ability to analyze the instant information when I participate in the recruitment of the industry in the future. Finally, I believe that the continuous presentation training and daily academic seminars in the MSc program will help me overcome my timidity and improve my communication skills in English, so that I can have more opportunities to present myself in my future career.

实际上，在我们国家，一些互联网公司和GIS产业、测绘产业，正在经历一定程度的裁员，这也正式我们要更加用心对待我们学业的原因。我为自己设定了几个未来工作的选择。首先，去到企业中担任web平台GIS应用的开发工程师，我本人倾向于后端的JAVA开发。As a current post-graduate student, I have wrapped up four years of learning GIS techniques and computer skills.因此我对开发工作有一定的认识，并且具备自学新知识的能力。通过课程引导和自我学习，我在MSc AGI学习期间将着力于提升自身的后端开发能力，了解全栈开发的一般要求，强化自身GIS方面开发的能力，提升竞争优势。如果我能够较为出色的完成现有的研究并将成果发表，我会申请读博深造并申请国内CSC留学项目以再次获取出国交流的机会。这是基于学术资源的可获得性、学术交流的氛围和就业竞争力角度综合考虑做出的选择（但这需要我提升自己的定力，并为自己打下深厚的研究基础）。另外，我也会考虑成为一名高中老师，因为我实际上已经初步具备了高中地理科目教学的能力，这与我的性格相符合，传授知识对于我而言是一种颇具享受的过程。So, **how will this MSc qualify you for the job market?** 我认为最为重要的一点是，通过课程学习，我补充了个人在GIS领域的基础知识，这使得我的专业知识体系更加完整，使我了解了如何获取和使用在线地图资源，也使我能够掌握基本的Web端或移动端的GIS应用（二次）开发能力。同时，每周定期的课业和任务培养了我获取信息并处理的能力，也在提升我的抗压能力。现今的职业市场不仅依靠专业能力，更依赖信息差来区分待业者的综合能力，因此MSc项目期间相对繁重的课业和要求能够提升我在未来参与行业招聘时，分析即时信息的能力。最后，我相信在MSc持续的presentation训练和日常学术研讨能够帮助我克服胆怯，提升我的英文汇报与交流能力，使我在未来的职业发展中能够获得更多自我展示的机会。

Yuzhou Chen