

Please Confirm Submission

Please review your answers and if everything is correct, use the button at the bottom of this page to finish your application.

Once you submit your application, changes are no longer possible online.

After you hit the submit button your information will be sent to the Graduate Division. Afterwards your application will be made available to the academic program to which you applied.

If you wish to make any changes after submitting this application, please contact either the Graduate Division or your department. If you want to make a correction in the program or degree level to which you are applying, please contact Joanna Itoh at jitoh@uci.edu or by phone (949) 824-4960 within 3-5 days of submitting your application. Any other corrections should be made on paper and submitted to the department to which you are applying.

Date/Time: = 12/13/2014

Remote Host = 101.6.52.204

Application Number = 242384

Personal Information:

Legal Name

Family/Last Name (Surname) = Pan

First Name = Baoxiang

Middle Name =

Different names = Xiao Pan

Birthdate = 06/22/1991

Birthplace = Feixian/Shandong/China

Gender = M

Self-Identified Gender =

Electronic Mail Address: = panbaoxiang@hotmail.com

Citizenship/Residency:

Citizen and Visa Information: = Foreign (Stdnt Visa)

Country of Citizenship: = People's Republic of China

Country of Citizenship (Other): =

If not CA resident, Is residency expected = N

If "yes" expected date of residency =

Permanent Mailing Address

Street1 = #310 New Hydraulic Building

Street2 = Tsinghua University

City = Beijing

Postal or Zip Codes: = 100084

Use until: mmddyy = 09/22/2025

Telephone Information - Telephone No.

Current Telephone Number: = +8613366720253

FAX Number: =

Current Mailing Address

Street1 = #310 New Hydraulic Building

Street2 = Tsinghua University

City = Beijing

Postal or Zip Codes: = 100084

Use until: = 09/22/2025

Telephone Information - Telephone No.

Current Telephone Number: = +8613366720253

FAX Number: =

Degree Program:

School/Dept. = Henry Samueli School of Engineering

Degree Code = 01284 (Civil Engineering Ph.D.)

Degree Objective: = PH.D.

Area of Interest: = Hydrology and Water Resources

Year and Quarter Applying For

Year = 2015

Quarter = F

Application and Enrollment History

Have you previously applied UCI = N

If yes, indicate the year and quarter:

Year: =

Quarter: =

Have you ever enrolled at UCI? = N

If yes, indicate the latest year and quarter

Year: =

Quarter: =

Are you currently enrolled? = N

Test Scores:

Graduate Record Examinations (GRE)

GRE Test Date = 09/14

GRE Scores

Verbal = - 152

Quantitative = - 170

Analytical = 3.5

GRE Percentages

Verbal = 54

Quantitative = 98

Analytical = 38

GRE Subject Test

GRE Subject Test Date: mmyy =

Subject area taken =

Subject Score =

Subject Percentage =

Graduate Management Admission Test (GMAT)

GMAT Exam Date =

GMAT Scores

Verbal % =

Quantitative % =

Total Score =

Analytical Writing % =

Test of English as a Foreign Language (TOEFL)

TOEFL Exam Date = 11/14

Score = 102

TSE Exam Date =

Score =

International English Language Testing System (IELTS)

Listening: 0.0

Writing: 0.0

Reading: 0.0

Speaking: 0.0

Total: 0.0

California Subject Examinations for Teachers (CSET)

CSET - Single Subject

Exam Date Passed?

N

N

N

N

CSET - Multiple Subject

Exam Date Passed?

N

N

N

N

California Basic Educational Skills Test (CBEST)

Exam Date Passed?

N

Academic History:

College or University = Wuhan University

Dates Enrolled (from)-(to) = 092008 - 072012

Degree Awarded = B.E.

Date Degree Conferred mmyy = 072012

Cumulative Grade Point Average = 3.23

Units Completed = 0

Major Field of Study = Hydrology and Water Resources

College or University = Tsinghua University

Dates Enrolled (from)-(to) = 092012 - 072015

Degree Awarded = M.S.

Date Degree Conferred mmyy =

Cumulative Grade Point Average = 3.47

Units Completed = 0

Major Field of Study = Hydrology and Water Resources

Statement of Purpose:

The unpaved muddy yard after a heavy summer rain is the heaven of earthworms, toads, plants and my childhood's imagination. With the naïve drawing of earning a living without missing the beauty of nature, I got enrolled in the Department of Hydrology and Water Resources. The academic trainings during the past 6 years tells that nature will not reveal its true beauty without one's tireless work in decoding it. I enjoy the challenges and their aesthetic returns and hope to continue this hard way in The Henry Samueli School of Engineering, University of California, Irvine.

Computer codes are my language in expressing academic understandings. The Github records (<https://github.com/morepenn>) depict a fuzzy track of my research interests. The dense green grids in the time bar are milestones I passed along the way. It is embarrassing to admit that it takes me more than a month writing a Xinanjiang model four years ago. But as the iterative structure was distilled, the later process-based models like TOP model, HyMod, Shanbei Model and water balance models became logical conclusions once their constitutive functions had been established. As models were constructed, Professor Lihua Xiong encouraged us to "hack" them from the easiest part, parameters. I still remember the thrill when a satisfying parameter set was produced after refreshing trials by simulating the evolution of species. I enjoyed the specific tricks of iterative evolving in the gene algorithm, particle swarm optimize algorithm, SCE-UA algorithm. This study experience expanded my vision that data could tell us knowledge if they were well organized.

My undergraduate degree proposal deals with the water-heat correlation pattern simulation across temporal scales. The similarity of constitutive functions in such models

forced me to discover the mechanism behind them. There are two distinct forks, one aims at 'integrating' detailed processes along temporal and spatial paths to reveal the general picture, the other starts from a systematic perspective. The former gets its gene from mechanics, the latter inherits a thermodynamics view. My graduate supervisor Assistant Professor Zhentao Cong introduced me a compromised way, the stochastic soil moisture model. Like most of the hydrological models, this model takes the point scale soil column as the central in precipitation participation. However, a stochastic analysis perspective enables us to bypass the difficulty to analyze iterative model structures. The stationary and temporal mean solution of the Kormogorov Forward Stochastic Differential Equation provides general knowledge of a point scale soil using characteristics distilled from the input observations. I generalized it to a basin scale form by introducing the soil storage capacity distribution curve into the main equation. Later, the stochastic control function of runoff, evapotranspiration and leakage were deduced based on it. I still get a long way to go along this path, such as considering the seasonal fluctuation of precipitation and evapotranspiration using harmonic analysis, detecting the long temporal range hydrological pattern's sensitivity to the meteorological and underlying surface characteristics.

Another of my research interest lies in stochastic hydrology. I enjoy the wisdom of reorganizing our knowledge in the context of probability theory. This ideological trend starts from Leibniz, Bernoulli, Jeffreys, Jaynes, and is gaining its support in the hydrology community. I tried to verify the results of the stochastic analysis mentioned above in the context of information theory. The theoretical framework originated from the doctor thesis of my senior fellow apprentice Doctor Wei Gong. I was so excited to find a crystalline theory that quantifies the information contribution of data and model in math. The excitement made me underrate its logical and methodological difficulties at first. Fortunately, the discussion with researchers from different areas and the trials using various methods did pay at last. The information flow between watershed hydrological terms shows a maximum point at seasonal scale, which perfectly confirmed the conjecture of the stochastic soil moisture model.

Data obtained from different sources are constantly flooding in in this digit age. Models developed by various research groups occupy the journals periodically. I want to quantify their specific contributions. What is the advantage of one data source over another, in which model? When is it high time to push the simulation forward and when to intensify the observations? In a general point of view, models are no more than compressors of observations, observations form a model if they are intensive enough to enable an efficient interpolation. The existed data-driven and process-based models should be complementary (for example, the Budyko curve could instruct the construction of kernel functions in support vector regression, and vice versa). These could be re-organized in the context of algorithm complexity. As I know, many researchers have

started this work. I should catch the trend and make my own contributions in the frontier.

Nothing could compare with having fun in one's job. For me, the most interesting job is to keep finding secrets of different complex interlocking earth systems. Though sometimes I would complain that the research work turns the beautiful scene into hell once I attempted quantify its material, energy and information flows. But the joy of finding new things pays all. To do research is not like adding bricks to the grand edifice of knowledge. The knowledge edifice would grow by itself if it were well organized. I want to keep pushing down and re-constructing the projection of it in my mind again and again, until one day this projection is strong enough to influence the reason of others. Maybe a career in university or research institute is my best choice.

I learned UCI through Doctor Jasper A. Vrugt and Professor Kuo-lin Hsu. Jasper is doing excellent work in constructing an iterative research loop that balances observations and simulations. Kuo-lin is the pioneer who first introduced the artificial neural network in hydrological simulation. Both of them won prestige to The Henry Samueli School of Engineering. Besides, I will make a poster presentation in the session organized by Jasper in the AGU fall meeting 2014. Hope to have enlightening academic communications with Jasper on the issue of understanding interfaces between models and data(H110).

Considering the statements above, I believe I possess the ability and motivation to make a trace in the discipline of earth science. I hope you will take a favorable decision regarding my admission to the Ph.D. program and I look forward to joining the big family of UCI.

List Educational Institutions:

Summer Mathematics Training Campus Wuhan University
School of Architecture, Huazhong University of Science and Technology.(Minor in architecture degree)
Summer Hydraulics Campus , Tsinghua University

List Formal Academic Work in Progress:

Participating in the Ecohydrological Process Integrated Research Project supported by the National Science Foundation of China. (specifically, observation station construction, stochastic hydrological model construction, data processing);
Participated in the Ecohydrological Optimization Program supported by the National Science Foundation of China. (Specifically, on-site observation, coding).

Publications:

Other Information:

Describe level of competence in reading

Chinese is my native language. I used to serialize novels in the high school newspaper, I wrote several play scripts during the first two undergraduate years, most of them are on show and received receptions. I can communicate with others fluently in Chinese.

Describe other training and experiences

I have been interested in stochastic learning since my junior semester, and keeping in touch with the latest progresses in this area. The training in this field enables me to distill information from the complex earth material and energy cycle;

I have been systematically studies the elements of information theory. Given the work I have done by application its basic ideas in studying the hydrological cycle, I believe the observation system and our simulation patterns could benefit each other better within this framework,

I am good at several programming forms, process-oriented(C), object-oriented(C++), functional(scheme). I pay lots of attention to programming manner, because I believe the codes represents my understanding.

Where else have you applied for admission

Academic Honors, Prizes or Scholarships:

Entrance Scholarship of Wuhan University;

Outstanding Graduation Thesis of Hubei Province;

Highest Paper and Interview Score in the Graduate Entrance Exam.

Honor Societies:

Correspondence with UCI Faculty/Staff:

Jasper Vrugt

Kuo-lin Hsu

Financial Support: 1 - Research Assistantship

2 - Graduate

3 - Teaching Assistantship

4 - Diversity

5 - Nonresident Tuition

List other agencies to which you applied

China Scholarship Council

Describe any award you have received:

I expect to apply the scholarship from the China Scholarship Council on condition that on scholarship were offered.

Survey:

How did you learn about UCI = UCI Publication

Would you like housing info = Y

Would you like federal aid info =

UC Employed: N

UC Campus Employed:

US Military Service: N

Consider yourself disabled in any way: N

Interest in UCI Disability Svcs Ctr:

Waiver of Access to Letters of

Recommendation = waive

Agree to legal terms of application = Y

NAME = Pan Baoxiang

DATE = 12/07/2014

Payment Method* = credit

*Payment is non-refundable

Once you click on the "Submit Application" button:

- Your browser will be taken to the UCI Central Credit Card Gateway, where you will pay.
- Once you have paid your browser will be brought back to this site where you will receive a confirmation of payment.
- If you can not successfully pay now you will be able to try to pay by credit again, or you may switch and pay by check.
- Your application will not be processed until it has been paid for.

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