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Objective :

A research position in the field of Machine Learning or Bioinformatics Research.

Research Interest:

I have wide research interests, mainly including artificial intelligence, statistical machine learning, data mining, bioinformatics, information retrieval, nonlinear Embedding, Mathematics Modeling. And Recently, I may focus following problems: "Non-Convex Optimization and Imbalance Learning", "Efficient Semi-Supervised Learning with Fenchel Duality ", "Nowhere Differentiable Functions in Learning".

Education:

- 1997-2004   Guangzhou No.2 middle School.
  - 2002-2003   Attended the National Physics Competition as representative of Guangzhou City. Won the second prize (in 2003) and the third prize (in 2004) of Guangdong Physics Competition.
  - 2003-2004   Accepted by Guangzhou City's privilege class for the gifted in physics.
  - Attended the national training course for Mathematics Olympic Competition in Beijing.
- BS Degree: (2004-now) 04Bilingual class of Computer Science in South China University of Technology (top 10% student| GPA: 85/100)

Publication:

1. Zhi-Zhuo Zhang et.al, 2007, Ranking Potential Customers based on Group-Ensemble (the special Spring 2008 issue of the International Journal of Data Warehousing and Mining, Vol.4 No.2 April-June 2008, p79-89)

2. Ying-Peng Zhang, Zhi-Zhuo Zhang, Qiong Chen, 2007, A New Nearest Neighbor Searching Algorithm based on M2M Model (IMECS 2007 proceeding, EI indexed)

3. Ying-Peng Zhang, Zhi-Zhuo Zhang, Qiong Chen, 2007, A New Randomized Parallel Dynamic Convex Hull Algorithm based on M2M Model   (ACM, CTIC2007, P79)

▪ Competition & Award:

(International level)：
1. Honorable Mention of [Interdisciplinary Contest in Modeling 2007](USA)
2. [PAKDD 2007 Competition] (open Category): the 15th place (47 success submits, 250 more registrations)
3. [KDD CUP 2007:] Task1 the 27th place , Task2 the 20th place(39 success submits, 200 more registrations)

(National level)：
1．Second prize of National Challenge Cup. (2007)
2．Computer World Magazine Scholarship(2007)
3．IBM Excellent Student scholarship.(2007)
4．HP Excellent Student scholarship.(2007)
5．EPSON foundation scholarship.(2005)

(Province level)：
1．Outstanding Award of Challenge Cup of Guangdong(2007)
2．Second prize of Anway Cup of Graduation Design in Pan-Pearl River Delta (2008)
3．Second prize of Universities' Software Competition of Guangdong Province (2005)
4．Third prize of Universities' Software Competition of Guangdong Province (2006)
5．Best demonstrating award of Universities' Software Competition of Guangdong Province (2006)
6．Third prize of Mathematic Modeling Competition in Guangdong Province.(2006)

(School level)： Ignore here (too many)

▪ Main Research Projects: (More details in my [homepage])

(Not including course projects)

1. [M2M Computation Model] (Main contribution, 2007)
- Proposed a computational model called "Macro To Micro" for point set processing, which has novel properties including preprocessing sharing, high parallel processing, easily trade off between different merits.
- Analyzed and compared the time and space complexity of several classical algorithms and corresponding algorithms based on M2M, such as Nearest Neighbor Searching Algorithm, Convex Hull Algorithm, and Path Finding Algorithm.
- Designed a nearest neighbor searching algorithm called M2MNN and a convex hull algorithm called M2MCH, and show their significant advantages to some well-known algorithms like KD-Tree, Quad-Tree and Quick Hull, Graham algorithm.

2. [Ranking Potential Customers Based on GroupEnsemble Method] (Team leader, 2007)
- Analyzed the modeling data and eliminated the senseless attribution with information gain, generated new attribution for special meaning with prior knowledge.
- Designed a 3-level ranking model including modified bagging, RankBoost, Expending Regression Tree, which is with special considerations of data imbalance, missing value and time-variant distribution.

- Applied the model selection and parameters selection using AUC criteria in cross-validation.

3. Netflix Movie Rating Prediction (Team leader, 2007)

- Investigated the some well-known algorithms for recommendation system, including Co-cluster, SVD-Decomposition, and Collaborative filtering etc.
- Proposed two memory-saving methods: Delay Division and Float Scaling; and modify SVD algorithm and Collaborative Filtering algorithm in order to handle the huge data.
- Designed a novel graph-based model, which focuses on the user-item graph and applies graph algorithms and PageRank-like method to update the configuration of the graph.

4. Hand-writing Chinese Character Recognition System (Project leader, 2006)

- Implemented a multi-function text editor and PC camera interface, which provides a well-define platform for handwriting character recognition.
- Designed a efficient on-line learning method based on stroke series, which can perform much faster than hidden Markov model, and be self-adaptive after each successful recognition.
- Developed our original algorithms to solve the well-known problems including position detection, scale detection, rotation detection.

5. Distributed Firewall System Based on Intrusion Detection (Project leader, 2005)

- Designed the distributed architecture of the firewall system, which enables each client can share security information with each other and update the detect components on demand.
- Implemented our self-invented detection component combining Misuse Detection and Anomaly Detection and develop the effective algorithms of rule selection and sensor selection, comparing with well-known IDF system Bro and Snort.

6. GA-ANN-GA Control Model in Space Travel (Main contribution, 2006)

- Proposed a novel concept of GA supervisor, which can find a feasible action series in the pre-defined map and then give the feedback to learner during training.
- Implemented a novel GA-ANN learner, which applied the GA algorithm to find the good configuration of a forward neural network.
- Proposed and proved adding linear layers in GA-ANN learner can reduce training time and find a better configuration efficiently.

7. Text-based Protocol Detection and Learning (Project leader, 2006)

- Designed the distributed architecture of the protocol detection system, including reporter client and analyzer server.
- Proposed and evaluated the keyword weighting algorithm with several well-known protocols like http, pop, smtp, ftp and so on.

8. Organ Procurement and Transplantation Network(OPTN), Survey and Suggestion (Team leader, 2007)

- Modeled the OPTN with some basic assumptions, and evaluated the model by Monte Carlo Simulation.
- Proposed the suggestion to modify the current policies of OPTN and optimized the utilization of organ resource in n-way exchange case generally.
- Discussed the issue of selling organs according to our model, and analyzed the factors concerning most by the donors.

▪ Key Skill:

1. Familiar with C++, Java, C# programming language.
2. Familiar with open-source machine learning project such as Weka & Yale.
3. Experience of working in AI field, especially algorithms of optimizing and machine learning.
4. Familiar with the algorithms of image processing, and handwriting character processing and recognition.
5. Excellent in algorithm complexity analysis and optimization.
6. In-depth knowledge of Web-application Technology (PHP or ASP.net).
7. Familiar with TCP/IP and network security, with the experience of firewall system developing.
8. Skillful in Mathematics modeling with practical problem.
9. Familiar with the technology of Information Retrieval and Search Engine.

▪ Activity:

1. A member of student union
2. Technology manager of www.100steps.net
3. Participate in a NetMeeting project of a software company
4. Project manager in ExceedTech team
5. Volunteer in Robot Cup of China 2004

▪ English proficiency

GRE: Verbal 480 + Quantity 800 + Analytical Writing 4
CET6: 527