Personal details

Personal details

First / given name	Pouya
Second given name	
Third given name	
Surname/family name	Raoofi
Date of birth	26 March 1988
Preferred first/given name	Pouya
Previous surname	
Country of birth	Iran, Islamic Republic of
Legal nationality	Iranian
Dual nationality	Iranian
Country of residence	Iran, Islamic Republic of
Have you previously studied with us at the University of Bristol?	No

Contact details

Home address

Please provide your permanent residential address. If you have another address and would prefer for us to contact you at that address instead you have the opportunity to add a correspondence address in the next section.

Country	Iran, Islamic Republic of
Postcode	
Address Line 1	Tehran
Address Line 2	
City	Tehran
County	
Telephone	

If you would like us to send any postal correspondence to an address which is not your home address please enter an alternative address here. If you want us to send correspondence to your home address then please select No.

Do you want to add a correspondence address?	No
Country	Iran, Islamic Republic of
Postcode	
Address Line 1	Tehran
Address Line 2	
City	Tehran
County	
Telephone	

Agent

Agent details

Agency Name	
Email address	

Other information

Additional Documents

Please upload required documents as outlined in your admissions statement

Mode of study

How would like to study this programme?	Full Time

Qualifications

Qualifications

Institution	Qualification	Type	Subject	Actual/predicted	Grade	Start date	End date
Khaje Nasir Toosi University of Technology, Tehran	Master's Degree (PG)	Academic Qualification	Mathematics	Actual	15.22	01/Sep/2011	01/Sep/2013
Arak University	First degree BA/BSC etc	Academic Qualification	Mathematics	Actual	13.22	01/Sep/2007	01/Sep/2011

If these qualifications have altered since your last application please note the changes in the free text box here.

English Language

Is English your first language? No
What is your first language? Farsi
Did you study at school/university where you were taught in English? No
For how many years?
Have you sat a relevant English language test? Yes

TOEFL (internet-based)

Registration number
Date of TOEFL test
TOEFL reading score
TOEFL listening score
TOEFL speaking score
TOEFL writing score
TOEFL total score

IELTS (International English Language Testing System)

Test report form (TRF) number
UKVI number (if applicable)
Date of IELTS test
IELTS listening score
IELTS reading score
IELTS writing score
IELTS speaking score
IELTS total score

Pearson Test of English

Score report code
Date of Pearson test
Pearson listening score
Pearson reading score
Pearson speaking score
Pearson writing score
Pearson overall score

Other English Language test

Name of course	GRE
Registration number	
Date of test	06 December 2023
Listening score	
Writing score	
Reading score	
Total score	323

Experience

Current Employer

Employer name and address	
Job title and main duties	
Full time/Part time	
Date of Appointment	
End date (if applicable)	

Previous employment 1

Employer name and address	
Job title and main duties	
Full time/Part time	
Date of Appointment	
End date (if applicable)	

Previous employment 2

Employer name and address	
Job title and main duties	
Full time/Part time	
Date of Appointment	
End date (if applicable)	

Previous employment 3

Employer name and address	
Job title and main duties	
Full time/Part time	
Date of Appointment	
End date (if applicable)	

Other Experience

Do you have any other relevant work experience to support your application?	
Please provide details	

Personal statement

Personal details

Do you have a personal statement to upload?	Yes
Please type your personal statement in the box	

Research proposal

Research proposal

Proposed supervisor 1	
Proposed supervisor 1	
Proposed project title (max 150 chars)	

Passport and visa

Visa required

Do you require a visa to study in the UK?	Yes

Please fill out your passport details below. If you are unable to provide these at the current time you will have another opportunity to upload your passport after you submit the form. If you do not provide us with this information we will be unable to issue you with your confirmation of acceptance number and you will be unable to obtain a visa.

Passport details

Passport number	

Further details

Have you previously studied in the UK?	No
What was the highest level of study in the UK?	
Please confirm the total length of your UK study in years	

Referees

Referee 1

Do you have a reference to upload?	No
Type of reference	Academic
Referee title	Dr
Forename	Hassan
Surname	Haghighi
Position	Assistant Professor
Institution/Company	Khaje Nasir University
Email address	haghighi@kntu.ac.ir
Country	Iran, Islamic Republic of

Referee 2

Do you have a second reference to upload?	Yes
Type of reference	
Referee title	
Forename	
Surname	
Position	
Institution/Company	
Email address	
Country	

Funding

Funding 1

What is your likely source of funding?	University of Bristol scholarship
Please give the name of your scholarship or Studentship	
Please specify	
Percentage from this source	100
Is this funding already secured?	No

Funding 2

What is your likely source of funding?	
Please give the name of your scholarship or Studentship	
Please specify	
Percentage from this source	
Is this funding already secured?	

Funding 3

What is your likely source of funding?	
Please give the name of your scholarship or Studentship	
Please specify	
Percentage from this source	
Is this funding already secured?	

Other funding

I would like to be considered for other funding opportunities	Yes

Submission

Documents

Document type	File name
References	WorkRecommendation.pdf
Curriculum vitae	CV.pdf
Degree certificate	MSc1.pdf
Transcript	MSc2.pdf
Language qualification	GRE.pdf
Personal statement	Personal Statement.pdf
Research proposal	Proposal.pdf
Degree certificate	BSc.pdf
Transcript	BSc1.pdf
Passports and visas	Passport.pdf

By ticking the checkbox below and submitting your completed online application form, you acknowledge the University of Bristol will use the information provided from time to time, along with any further information about you the University may hold, for the purposes set out in the University's full Data Protection Statement. Applicants applying to the collaborative programmes of doctoral training should also read the Data Protection Statement for collaborative programmes of doctoral training.

The information that you provided on your application form will be used for the following purposes:

- To enable your application for entry to be considered and allow our Admissions Advisors, where applicable, to assist you through the application process;
- To enable the University to compile statistics, or to assist other organisations to do so. No statistical information will be published that would identify you personally;
- To enable the University to initiate your student record should you be offered a place at the University.

All applicants should note that the University reserves the right to make without notice changes in regulations, courses, fees etc at any time before or after a candidate's admission. Admission to the University is subject to the requirement that the candidate will comply with the University's registration procedure and will duly observe the Charter, Statutes, Ordinances and Regulations from time to time in force.

By ticking the checkbox below and submitting your completed online application form, you are confirming that the information given in this form is true, complete and accurate and that no information requested or other material information has been omitted. You are also confirming that you have read the Data Protection Statement and you confirm the statement below.

I can confirm that the information I have provided is true, complete and accurate. I accept that the information given in my application will be stored and processed by the University of Bristol, in accordance with the *UK General Data Protection Regulation and Data Protection Act 2018*, in order to:

- Consider my application and operate an effective and impartial admissions process;
- Monitor the University’s applicant and student profile;
- Comply with all laws and regulations;
- Ensure the wellbeing and security of all students and staff;
- If my application is successful to form the basis of the statement made within my application.

If the University of Bristol discovers that I have made a false statement or omitted signification information from my application, for example examination results, I understand that it may have to withdraw or amend its offer or terminate my registration, according to circumstances.

Contact Information:

Phone: 00989120159929

Email: pouyarfii67@gmail.com

Objective:

Seeking opportunities to leverage my extensive teaching and research expertise in Algebraic Geometry to contribute significantly to the field of mathematics while continuing my professional growth.

Education:

Master of Science in Algebraic Geometry

Institution: Khajeh Nasir Toosi University of Technology

Date: 2013

GPA: 3.25/4

Thesis: "Algebraic Geometric Codes from a Gröbner Basis Perspective"

Summary: Investigated the application of Gröbner bases in coding theory, focusing on encoding and decoding problems to enhance code efficiency and error correction.

Bachelor of Science in Applied Mathematics

Institution: University of Arak

Date: 2011

Skills:

Comprehensive knowledge in Algebraic Geometry.

Proficient in mathematical software: MATLAB, R, Mathematica.

Strong analytical and problem-solving abilities.

Excellent communication skills, with a track record of impactful presentations and publications.

Effective in both independent and collaborative research environments.

Professional Experience:

Academic Head

Organization: MyArman International Higher Education Services

Period: 2022-Present

Key Responsibilities:

Strategically overseeing the design and implementation of comprehensive academic programs in alignment with the organization's educational vision.

Innovatively developing and implementing pedagogical strategies to optimize student learning outcomes and academic excellence.

Providing leadership and managerial support to the educational staff, fostering a collaborative and dynamic academic environment.

Invited Researcher

Institution: Tehran University

Period: 2019-2022

Primary Contributions:

Actively engaged in advanced collaborative research in the field of Algebraic Geometry, contributing to the expansion of theoretical knowledge in this area.

Spearheaded extensive data analysis projects, utilizing advanced statistical and mathematical methodologies to derive insightful conclusions.

Authored and co-authored numerous scholarly articles for academic journals, significantly contributing to the body of research in Algebraic Geometry.

Invited Researcher

Institution: Khajeh Nasir Toosi University of Technology

Period: 2015-2019

Research Focus:

Conducted in-depth research in Linear Algebra and Algebra, addressing complex theoretical problems and advancing academic understanding in these areas.

Collaborated with a team of researchers and academics, contributing to various high-impact projects and scholarly discussions.

Mathematics Teacher

School: Farhan High School

Period: 2013-2015

Teaching Achievements:

Designed and delivered a comprehensive Calculus curriculum to high school students, emphasizing both theoretical understanding and practical application.

Employed a variety of teaching methodologies to cater to diverse learning styles, enhancing student engagement and academic performance.

Monitored and evaluated student progress, providing personalized feedback and support to foster a deep understanding of mathematical concepts.

Awards and Honors:

Iran's National Elites Foundation (INEF) Scholarship, 2013.

Iranian Mathematical Society (IMS) Scholarship, 2013.

Professional Memberships:

Iranian Mathematical Society (IMS)

Iranian Association of Mathematical Sciences (IAMS)

Courses:

Introduction to Mathematical Thinking (Stanford University)

Discrete Mathematics (Shanghai Jiao Tong University)

Real Analysis (Eindhoven University of Technology)

Topology (Korea Advanced Institute of Science and Technology)

Wolfram Mathematica (11 Hours with Taher Lotfi)

Introduction to Groebner Bases (Prof. Bernd Sturmfels, UC Berkeley)

Linear Algebra (Prof. Gilbert Strang, MIT Open Course - 27 Hours)

Calculus 1 & 2 (Dr. Linda Green, University of North Carolina at Chapel Hill - 19 Hours)

English Certificate:

GRE (Quantitative Reasoning 168, Verbal Reasoning 155, Analytical Writing 4, December 6,2023)

References:

Dr. Hassan Haghighi

Professor of Mathematics K.N.Toosi University

Email: haghighi@kntu.ac.ir

Description: Dr. Haghighi was my Master's advisor and supervised my research in Algebraic Geometry. He can provide insights into my research capabilities, problem-solving skills, and academic achievements.

Official Translation Form Persian

Emblem
Islamic Republic of Iran
Ministry of Science, Research and Technology

K. N. Toosi University of Technology

Certificate of Graduation

Master's Degree

[The photo of holder]
[University Hologram Affixed]

Date: January 01, 2024
No.: 34891

According to the verdict issued on November 05, 1988, by the Supreme Education Council;

Mr. POUYA RAOOFI,

Son of Hossein, holder of B.C. No. 39745 issued in Tehran, born in 1988 has successfully completed his postgraduate studies at the Faculty of Mathematics in September 2013. Therefore, the present **Master's Degree** in the field of **Pure Mathematics majoring in Geometry** is conferred upon the above-named.
May the above-named person succeed, with the Almighty's grace, in joining knowledge to pious acts, practical fear of God and in securing divine gratification by serving the people.

Signed & Stamped (Embossed):
Chancellor of Faculty of Mathematics
K. N. Toosi University of Technology
Ministry of Science, Research and Technology
President of University

True Translation Certified. January 9, 2024 Nz./7831

Dr. Majid Nemati
دکتر مجید نعمتی
مترجم رسمی زبان انگلیسی
قوه قضائیه - تهران
شماره پروانه: ۱۰۶۲
License No 1062
Certified English Language Translator at the Judiciary of I.R.I.-Tehran

آدرس: خیابان شهید بهشتی، خیابان سرافراز، نبش کوچه یکم، پلاک 1، طبقه همکف، واحد 4
Address: Official English Translator to the Judiciary, No. 1062No. 4, Moj Tower, Sarafraz St., Beheshti Ave.
Email: nematim@ut.ac.ir Mobile:(+98) 9127945160 Tel:(+98) 021 021-44651379

Official Translation From Persian

Arak University

Golestan Comprehensive Education System
Report No.: 100

Date of Printout: December 19, 2023
Time: 08:33

Transcript of Academic Records

[Holder's photo]

Full Name: **Mr. POUYA RAOOFI**	Student No.: **8612211117**
Father's Name: Hossein	Faculty: Science
Birth Certificate No.: 39745	Educational Dept.: Mathematics
National ID No.: 0083075224	Field of study: **Applied Mathematics**
Place of Issue: Tehran	Program: **Bachelor's Degree**
Date of Birth: March 26, 1988	Course: Daytime (Tuition Free)
Admission Type: District 1	

1st Semester of Academic Year, 2007-08 – Currently Studying - Regular

Code	Course title	Credit	Mark	Effect
1213001	Basic Physics 1 Lab. [Math.]	1	16.5	
1213030	General Mathematics 1	4	16	
1213036	Basic Physics 1 [Math.]	4	12	
1213039	Fundamentals of Computer & Programming [Math.]	4	13.5	
8013002	Human in Islam	2	17.5	
8013007	Introduction to the Constitution Law (Revolution)	2	19.5	

Sem., G.P.A.:15.09; Attempted: 17; Passed: 17; Consecutive Passed: 17; C.G.P.A.: 15.09

2nd Semester of Academic Year, 2007-08 – Currently Studying - Regular

Code	Course title	Credit	Mark	Effect
1213032	General Mathematics 2	4	16	
1213038	Fundamentals of Mathematics	4	14	
1213060	Advanced Programming	4	16	
8010001	General Persian Language (Faris)	3	16	
8011001	General Language	3	17.75	
8013005	Texts (Interpretation of Nahj al-balagha)	2	16	

Sem., G.P.A.:15.86; Attempted: 20; Passed: 20; Consecutive Passed: 37; C.G.P.A.: 15.51

1st Semester of Academic Year, 2008-09 – Currently Studying – guest to other universities **Probation 1***

Code	Course title	Credit	Mark	Effect
1213024	Linear Algebra	4	12	
1213035	Discrete Mathematics	4	12	
1213042	Differential Equations (Math.)	3	13	
1213043	Number Theory	4	10	

Sem., G.P.A.:11.67; Attempted: 15; Passed: 15; Consecutive Passed: 52; C.G.P.A.: 14.4

Dr. Majid Nemati
دکتر مجید نعمتی
مترجم رسمی زبان انگلیسی
قوه قضائیه - تهران
نجاد پروانه: ۱۰۶۲
License No 1062
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آدرس: خیابان شهید بهشتی،خیابان سرافراز،نبش کوچه یکم،پلاک 1،طبقه همکف،واحد 4
Address: Official English Translator to the Judiciary, No. 1062No. 4, Moj Tower, Sarafraz St., Beheshti Ave.
Email: nematim@ut.ac.ir Mobile:(+98) 9127945160 Tel:(+98) 021 021-44651379

2nd Semester of Academic Year, 2008-09 – Currently Studying - Regular				
Code	Course title	Credit	Mark	Effect
1213002	Statistics & Probabilities 1	4	11.46	
1213014	Operations Research (OR) 1	4	12.1	
1213020	Algebra 1	4	15.5	
8013009	History of Imamate (Islam)	2	16	
Sem., G.P.A.:13.45; Attempted: 14; Passed: 14; Consecutive Passed: 66; C.G.P.A.: 14.2				
1st Semester of Academic Year, 2009-10 – Currently Studying - Regular				
Code	Course title	Credit	Mark	Effect
1213008	Mathematical Analysis 1	4	14	
1213012	Numerical Analysis 1	4	7.75	1
1213015	Operations Research (OR) 2	4	12.5	
1213034	General Mathematics 3	4	13.1	
1213050	Complementary Algebra	2	16.5	
8013011	Way of Life (Ethics)	2	17	
Sem., G.P.A.:12.82; Attempted: 20; Passed: 16; Consecutive Passed: 82; C.G.P.A.: 13.88				
2nd Semester of Academic Year, 2009-10 – Currently Studying - Regular				
Code	Course title	Credit	Mark	Effect
1113260	Population & Family Planning	1	17.5	
1213010	Mathematical Analysis 2	4	11	
1213016	Complex Function	4	14.25	
1213019	Time Series 1	4	13.5	
1213040	Fundamentals of Geometry	4	13.5	
1213053	History of Mathematics	2	17	
1711350	Physical Education (1) Male	1	17	
Sem., G.P.A.:13.88; Attempted: 20; Passed: 20; Consecutive Passed: 102; C.G.P.A.: 13.88				
1st Semester of Academic Year, 2010-2011 – Currently Studying - Regular				
Code	Course title	Credit	Mark	Effect
1213004	Statistics & Probabilities 2	4	10.9	
1213017	Data Structure	3	11	
1213049	Mathematical Analysis 3	4	13	
1711351	Physical Education 3 (Male)	1	18.5	
8013003	Islamic Thoughts 2	2	16	
Sem., G.P.A.:12.79; Attempted: 14; Passed: 14; Consecutive Passed: 116; C.G.P.A.: 13.75				
2nd Semester of Academic Year, 2010-2011 – Currently Studying - Regular		Probation 2*		
Code	Course title	Credit	Mark	Effect
1213009	Stochastic Process 1	4	11	
1213012	Numerical Analysis 1	4	13.7	
1213031	Graph Theory and Its Application	4	12.25	
1213044	Set Theory	3	11	
1214025	Basic Physics 2 – Lab.	1	14.25	
1214059	Basic Physics 2	4	4.55	1
Sem., G.P.A.:10.66; Attempted: 20; Passed: 16; Consecutive Passed: 132; C.G.P.A.: 13.31				

Dr. Majid Nemati
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Email: nematim@ut.ac.ir Mobile:(+98) 9127945160 Tel:(+98) 021 021-44651379

4-2010-11 (1389) Reading under Supervision – Regular				
Code	**Course title**	**Credit**	**Mark**	**Effect**
1214059	Basic Physics 2	4	10	
Sem., G.P.A.:10; Attempted: 4; Passed: 4; Consecutive Passed: 136; C.G.P.A.: 13.22				

Status of the passed courses of the student based on the type of attempted course: 144

Type of Course	**Passed**	**G.P.A.**
General	21	17.06
Basic	33	13.58
Specialized Elective	23	13.84
Specialized Mandatory	40	12.41
Specialized Majoring	19	12.26

Summary of Educational Status
Last Education Status: Graduated – Date: July 22, 2011
C.G.P.A. Student: 13.22; University: 13.55; Faculty: 13.38; Field: 13.41

Transcript Notes:
In effect column, number 1 represents non-effecting of the course in total passed courses; number 2, represents non-effecting of course in C.G.P.A. and number 3 represents non-effecting of course in passed courses and G.P.A. of the student. In grade column the grade of the student represents in numerical and letter orders.

[Signed & Stamped:]
Director of Educational Affairs
Management of Educational Affairs Dept.
Arak University

True Translation Certified. January 8, 2024 Nz./8769

Dr. Majid Nemati
Certified English Language Trans
دکتر مجید نعمتی
مترجم رسمی زبان انگلیسی
قوه قضائیه - تهران
شماره پروانه ۱۰۶۲
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Tehran - I.R.I.

آدرس: خیابان شهید بهشتی، خیابان سرافراز، نبش کوچه یکم، پلاک 1، طبقه همکف، واحد 4
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Email: nematim@ut.ac.ir Mobile:(+98) 9127945160 Tel:(+98) 021 021-44651379

I am writing to express my sincere interest in pursuing a Ph.D. in Mathematics at the University of Bristol, and I am excited about the opportunity to contribute to the field of mathematics through research and teaching.

With a Master of Science in Algebraic Geometry from Khajeh Nasir Toosi University of Technology and a Bachelor of Science in Applied Mathematics from the University of Arak, I have cultivated a strong foundation in mathematical theory and analysis. My academic journey has been focused on exploring the intricate intersections of Algebraic Geometry, particularly in the realm of coding theory, where I investigated the application of Gröbner bases to enhance code efficiency and error correction.

My professional experiences, particularly as an Academic Head at MyArman International Higher Education Services, have provided me with valuable leadership skills and a deep understanding of pedagogical strategies to optimize student learning outcomes. Additionally, my roles as an Invited Researcher at Tehran University and Khajeh Nasir Toosi University of Technology have allowed me to actively engage in collaborative research endeavors, contributing to the expansion of theoretical knowledge in Algebraic Geometry and Linear Algebra. Through these experiences, I have honed my analytical and problem-solving abilities, effectively utilizing mathematical software such as MATLAB, R, and Mathematica to conduct advanced data analysis and derive insightful conclusions.

As a Mathematics Teacher at Farhan High School, I developed and delivered comprehensive curricula in Calculus, employing innovative teaching methodologies to enhance student engagement and academic performance. I believe that my passion for teaching, coupled with my strong communication skills and track record of impactful presentations, will enable me to effectively communicate complex mathematical concepts and inspire future generations of mathematicians at the University of Bristol.

Furthermore, my academic achievements, including scholarships from Iran's National Elites Foundation and the Iranian Mathematical Society, along with my GRE scores (Quantitative

Reasoning: 168, Verbal Reasoning: 155, Analytical Writing: 4), attest to my dedication to academic excellence and my readiness to undertake rigorous doctoral studies

I am confident that my background, skills, and experiences make me a strong candidate for the Ph.D. program in Mathematics at the University of Bristol. I am eager to contribute to the vibrant academic community at Bristol and to pursue cutting-edge research in Algebraic Geometry under the guidance of esteemed faculty members

Thank you for considering my application. I look forward to the opportunity to further discuss how my qualifications align with the goals of the Ph.D. program and to contribute to the ongoing advancements in the field of mathematics at the University of Bristol.

Working Title: "Optimizing Algebraic Geometry Codes via Gröbner Bases: A Comprehensive Study of Encoding, Decoding, and Minimum Distance Metrics"

Background and Objectives: Algebraic geometry codes, initially formulated by Goppa in the 1980s (1), have significantly contributed to advancements in coding theory. Specifically, improvements in the bounds of minimum distance have been achieved through their application (2). Solving polynomials, a fundamental task in algebraic geometry, involves various methodologies, with one notable approach being the utilization of Groebner bases (3), (4).

This research proposal aims to employ Groebner bases in addressing encoding (5) and decoding problems (6) within algebraic geometry codes, with a focus on determining their minimum distance (7). Furthermore, the study seeks to enhance error correction capabilities in information transmission systems through the effective utilization of Groebner bases (8).

While substantial progress has been made in leveraging Groebner bases for enhancing encoding and decoding processes in algebraic geometry codes (9), a notable research gap exists in exploring practical implementations and efficiency considerations. Existing studies have primarily concentrated on theoretical aspects and method comparisons, neglecting in-depth investigations into computational complexities, resource requirements, and scalability of Groebner basis approaches when applied to real-world coding scenarios (10). Computational challenges, particularly in processing time and memory usage, arise during the implementation of Groebner bases (11).

The performance of Groebner basis approaches varies across different scales of application, ranging from small-scale scenarios (12) to large-scale distributed storage systems (13). Integrating Groebner bases into the decoding processes of algebraic geometry codes in the presence of practical communication channel impairments presents unique challenges and opportunities that need to be addressed to enhance error-correction capabilities in realistic scenarios (14).

The efficiency of Groebner bases exhibits variations across distinct types of algebraic geometry codes, such as Reed-Solomon codes (15) versus Goppa codes (16). The properties of specific codes contribute to the adaptability and performance of Groebner basis methods in different coding scenarios (17). Disparities between theoretical expectations and practical implementations of

Groebner bases in encoding and decoding processes for algebraic geometry codes exist, providing valuable insights for refining strategies to align theoretical predictions with real-world outcomes (18).

BCH codes, a class of cyclic error-correcting codes, have been extensively studied and applied in various fields such as consumer devices, communication systems, and data storage systems (19). BCH codes are known for their error-correcting capability and are often considered among the best cyclic codes, especially as a special subclass of cyclic codes (20).

BCH codes are popular for detecting and correcting a higher number of errors in communication applications and the storage domain (21).

Error-correcting codes play a crucial role in ensuring the integrity of transmitted data, and the use of Gröbner bases has emerged as a powerful tool in decoding and error correction processes (22). The application of Gröbner bases extends to the decoding of affine variety codes, where the Berlekamp-Massey-Sakata algorithm has been generalized for finding the Gröbner basis of error-locator ideals for these codes (23), (24). Moreover, the use of Gröbner bases for lattices and algebraic decoding algorithms has been introduced, further emphasizing the broad applicability of Gröbner bases in error correction processes (25).

Conducting a thorough comparative analysis of Gröbner bases against other polynomial solving methods like Buchberger's Algorithm (26), Faugère's F4 and F5 algorithms, and resultants (27). This could involve assessing their computational efficiency, accuracy, and applicability to different types of algebraic geometry codes.

Methodology:

1. **Theoretical Framework:**
    a) Develop a theoretical framework for the application of Groebner bases in algebraic geometry codes, emphasizing encoding, decoding, and minimum distance analysis.
    b) Formalize mathematical models that represent the encoding and decoding processes using Groebner bases for different types of algebraic geometry codes.

2. **Computational Complexity Analysis:**

c) Investigate and quantify the computational complexities associated with Groebner basis methods in the context of algebraic geometry codes.

d) Evaluate resource requirements, processing time, and memory usage for Groebner basis implementations, considering variations in code types and scales of application.

3. **Algorithm Development:**

e) Develop algorithms for encoding and decoding processes using Groebner bases, focusing on practical implementation aspects.

f) Consider variations in code structures (e.g., Reed-Solomon codes, Goppa codes, BCH codes) and assess the adaptability of Groebner bases in each case.

4. **Practical Implementations:**

g) Implement Groebner basis-based encoding and decoding algorithms in simulation environments.

h) Evaluate the performance of the developed algorithms in real-world coding scenarios, considering communication channel impairments, error rates, and system constraints.

5. **Scalability Assessment:**

i) Investigate the scalability of Groebner basis approaches in encoding and decoding processes across different scales of application (small-scale to large-scale distributed storage systems).

j) Address challenges and opportunities presented by practical communication channel impairments in large-scale systems.

6. **Comparison and Evaluation:**

k) Compare the performance of Groebner basis methods with existing approaches for encoding and decoding in algebraic geometry codes.

l) Evaluate the effectiveness of Groebner bases in enhancing error correction capabilities, considering both theoretical expectations and practical implementations.

7. **Case Studies:**

m) Conduct case studies with specific algebraic geometry codes (e.g., BCH Codes) to analyze the impact of code properties on the adaptability and performance of Groebner basis methods.

8. **Validation and Verification:**

n) Validate the results through mathematical proofs and simulations.

o) Verify the correctness and efficiency of the proposed algorithms using formal verification techniques.

Timeline:

Months 1-3: Literature Review and Theoretical Framework

Conduct an extensive literature review on Gröbner bases, algebraic geometry codes, and related coding theory.

Familiarize with existing theoretical frameworks and models.

Develop a comprehensive theoretical framework for the application of Gröbner bases in algebraic geometry codes.

Months 4-6: Computational Complexity Analysis

Investigate and quantify the computational complexities associated with Gröbner basis methods in the context of algebraic geometry codes.

Evaluate resource requirements, processing time, and memory usage for Gröbner basis implementations.

Begin the development of mathematical models for computational complexity analysis.

Months 7-9: Algorithm Development

Develop algorithms for encoding and decoding processes using Gröbner bases, emphasizing practical implementation aspects.

Consider variations in code structures (e.g., Reed-Solomon codes, Goppa codes, BCH codes) and assess the adaptability of Gröbner bases in each case.

Months 10-12: Practical Implementations and Scalability Assessment

Implement Gröbner basis-based encoding and decoding algorithms in simulation environments.

Evaluate the performance of the developed algorithms in real-world coding scenarios, considering communication channel impairments, error rates, and system constraints.

Investigate the scalability of Gröbner basis approaches in encoding and decoding processes across different scales of application.

Months 13-15: Comparison and Evaluation

Compare the performance of Gröbner basis methods with existing approaches for encoding and decoding in algebraic geometry codes.

Evaluate the effectiveness of Gröbner bases in enhancing error correction capabilities, considering both theoretical expectations and practical implementations.

Begin case studies with specific algebraic geometry codes (e.g., BCH Codes) to analyze the impact of code properties on the adaptability and performance of Gröbner basis methods.

Months 16-18: Validation, Verification, and Finalization

Validate the results through mathematical proofs and simulations.

Verify the correctness and efficiency of the proposed algorithms using formal verification techniques.

Finalize the research findings, conclusions, and recommendations for future work.

References:

1. V. D. Goppa, "Algebraico-Geometric Codes," Mathematics of the USSR-Izvestiya, vol. 21, no. 1, pp. 75, 1983.

2. I. Duursma, R. Kirov, and S. Park, "Distance Bounds for Algebraic Geometric Codes," Journal of Pure and Applied Algebra, vol. 215, no. 8, pp. 1863–1878, 2011.

3. D. Lazard, "Gröbner Bases, Gaussian Elimination and Resolution of Systems of Algebraic Equations: Algorithms 2 — Polynomial Ideal Bases," in European Conference on Computer Algebra (EUROCAL 1983): Computer Algebra, Lecture Notes in Computer Science, vol. 162, pp. 146–156, 2005.

4. H. Kera, Y. Ishihara, Y. Kambe, T. Vaccon, and K. Yokoyama, "Learning to Compute Gröbner Bases," ArXiv, abs/2311.12904, 2023.

5. C. Heegard, J. Little, and K. Saints, "Systematic encoding via Grobner bases for a class of algebraic-geometric Goppa codes," IEEE Transactions on Information Theory, vol. 41, no. 6, pp. 1752–1761, 1995.

6. K. Saints and C. Heegard, "Algebraic-geometric codes and multidimensional cyclic codes: a unified theory and algorithms for decoding using Grobner bases," IEEE Transactions on Information Theory, vol. 41, no. 6, pp. 1733–1751, 1995

7. D. Boucher and F. Ulmer, "Coding with skew polynomial rings," Journal of Symbolic Computation, vol. 44, no. 12, pp. 1644–1656, 2009.

8. X. Chen, I.S. Reed, T. Helleseth, and T.K. Truong, "Use of Gröbner Bases to Decode Binary Cyclic Codes up to the True Minimum Distance," IEEE Transactions on Information Theory, vol. 40, no. 5, pp. 1654–1661, 1994.

9. A. Lvov, L.A. Lastras-Montaño, B. Trager et al., "Verification of Galois field-based circuits by formal reasoning based on computational algebraic geometry," Form Methods Syst Des, vol. 45, pp. 189–212, 2014.

10. B. Buchberger, "A note on the complexity of constructing Gröbner-bases," in European Conference on Computer Algebra (EUROCAL 1983): Computer Algebra, Lecture Notes in Computer Science, vol. 162, pp. 137–145, 1983.

11. B. Buchberger, "A note on the complexity of constructing Gröbner-bases," in EUROCAL 1983: Computer Algebra, Algorithms 2 — Polynomial Ideal Bases, Lecture Notes in Computer Science, vol. 162, pp. 137–145, 2005.

12. C. Cid, S. Murphy, and M. J. B. Robshaw, "Small Scale Variants of the AES," in International Workshop on Fast Software Encryption (FSE 2005: Fast Software Encryption, Lecture Notes in Computer Science, vol. 3557, pp. 145–162, 2005.

13. F. Farahmandi and B. Alizadeh, "Groebner basis based formal verification of large arithmetic circuits using Gaussian elimination and cone-based polynomial extraction," Microprocessors and Microsystems, vol. 39, no. 2, pp. 83-96, 2015.

14. J. Lv, P. Kalla, and F. Enescu, "Efficient Gröbner Basis Reductions for Formal Verification of Galois Field Arithmetic Circuits," IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, vol. 32, no. 9, pp. 1409-1420, 2013.

15. Y. Shany and A. Berman, "A Gröbner-Bases Approach to Syndrome-Based Fast Chase Decoding of Reed–Solomon Codes," IEEE Transactions on Information Theory, vol. 68, no. 4, pp. 2300-2318, 2022.

16. P. S. L. M. Barreto, R. Misoczki, and R. Lindner, "Decoding Square-Free Goppa Codes Over Fp," IEEE Transactions on Information Theory, vol. 59, no. 10, pp. 6851-6858, 2013.

17. P. Loustaunau and E. V. York, "On the Decoding of Cyclic Codes Using Gröbner Bases," Applicable Algebra in Engineering, Communication and Computing, vol. 8, pp. 469–483, 1997.
18. M. Sala, "Gröbner Bases, Coding, and Cryptography: A Guide to the State-of-Art," in Gröbner Bases, Coding, and Cryptography, pp. 1–8, 2009.
19. H. Liu, C. Ding, and C. Li, "Dimensions of three types of BCH codes over," Discrete Mathematics, vol. 340, no. 8, pp. 1910-1927, 2017.
20. S. Li, C. Ding, M. Xiong, and G. Ge, "Narrow-Sense BCH Codes over GF(q) with Length n=(q^m-1)/(q-1)," IEEE Transactions on Information Theory, PP (99), 1-1, 2017.
21. S. Koorapati and S. Prakash, "Design of Any Codeword Length Parallel Long BCH Encoders with the Help of an Efficient C-Utility," International Conference on VLSI Systems, Architecture, Technology and Applications (VLSI-SATA), March 2, 2015.
22. Bulygin, S., and Pellikaan, R., "Bounded distance decoding of linear error-correcting codes with Gröbner bases," J. Symbolic Comput., vol. 44, no. 12, pp. 1626–1643, 2009
23. H. Matsui, "Decoding a class of affine variety codes with fast DFT," 2012 International Symposium on Information Theory and its Applications, pp. 436-440, 2012.
24. H. Matsui, "Fast Erasure-and-Error Decoding and Systematic Encoding of a Class of Affine Variety Codes," ArXiv, abs/1208.5429, 2012.
25. M. Aliasgari, M.-R. Sadeghi, and D. Panario, "Grobner Bases for Lattices and an Algebraic Decoding Algorithm," Communications, IEEE Transactions on, vol. 61, 10.1109/Allerton.2011.6120333, 2011.
26. J. Mojsilović, D. Peifer, and S. Petrović, "Learning a performance metric of Buchberger's algorithm," arXiv preprint arXiv:2106.03676, 2021.
27. Albrecht, M., and Perry, J., "F4/5," arXiv preprint arXiv:1006.4933, 2010.

Official Translation From Persian

K.N. Toosi University of Technology

Transcript of Academic Records

Golestan Educational Comprehensive System
Report No.: 99
Date/Time: December 31, 2023 – Time: 12:20
[The photo of holder is scanned]

Full Name: **Mr. POUYA RAOOFI**	**Student No.: 9004314**
Gather's Name: Hossein	Faculty: Mathematics
B.C. No.: 0083075224	Field of Study: **Pure Mathematics Majoring in Geometry**
Birthdate: March 26, 1988	Program: **Master's Degree**
Place of Issue: Tehran	Graduation Date: September 22, 2013
Type of Admission: Open to All	Last Status: **Graduated**

[Grades area out of 20.00]

1st Semester of Academic Year, 2011-2012– Currently Studying Regular — **Probation 1***

Code	Course title	Credit	Mark	Effect
5712064	Advanced Algebra 3	4	14.5	
5712068	Manifold Geometry	4	10	1

Sem., G.P.A.: 12.25; Attempted: 8; Passed: 4; Consecutive Passed: 4; C.G.P.A.: 12.25

2nd Semester of Academic Year, 2011-2012– Currently Studying Regular

Code	Course title	Credit	Mark	Effect
5712054	Algebra Geometry	4	14.75	
5712124	Introduction to Riemann Surfaces	4	14	

Sem., G.P.A.: 14.38; Attempted:8; Passed: 8; Consecutive Passed: 12; C.G.P.A.: 13.31

1st Semester of Academic Year, 2012-2013– Currently Studying Regular

Code	Course title	Credit	Mark	Effect
5712062	Project	6	Project continuation	3
5712098	Algebra Geometry 2	4	17.5	
57120103	Real Analysis 1	4	12	

Sem., G.P.A.: 14.75; Attempted: 14; Passed: 8; Consecutive Passed: 20; C.G.P.A.: 13.79

2nd Semester of Academic Year, 2012-2013– Currently Studying Regular

Code	Course title	Credit	Mark	Effect
5712061	Seminar	2	19	
5712062	Project	6	18.8	
5712107	Algebraic Topology 1	4	17	

Sem., G.P.A.: 18.23; Attempted: 6; Passed: 12; Consecutive Passed: 32; C.G.P.A.: 15.27

Summary of Educational Status
Last Status: **Graduated** – Date: Sept. 22, 2013
C.G.P.A.: Student: 15.27

Remarks: In the effect column, number 1 represents non-effecting of the course in total passed courses; number 2, represents non-effecting of course in C.G.P.A. and number 3 represents non-effecting of course in passed courses and G.P.A. of the student, number 4 represents the term GPA and non-effecting of the number of passed credits in the CGPA of the student.
In the grade column the grade of the student represents in numerical and letter orders.

[Signed & Stamped:]
Director of Postgraduate Studies of the University
K. N. Toosi University of Technology

True Translation Certified. January 7, 2024 Nz./8769

Dr. Majid Nemati — دکتر مجید نعمتی — مترجم رسمی زبان انگلیسی قوه قضائیه - تهران — پروانه ۱۰۶۲ — License No. 1062 — Certified English Language Translator to the Judiciary of I.R.I.Tehran

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Address: Official English Translator to the Judiciary, No. 1062No. 4, Moj Tower, Sarafraz St., Beheshti Ave
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Official Translation From Persian
****

State Emblem
Islamic Republic of Iran
Ministry of Science, Research & Technology
University of Arak

Certificate of Graduation

Bachelor's Degree

[Duty Stamp Affixed]
[Photo of the holder is affixed and sealed.]
Ref. No.: 1402/8713
Date: December 20, 2023

According to the approval dated November – December 1996 of Supreme Education Development Council,

Mr. POUYA RAOOFI,

Son of Hossein, holder of B.C. No. 39745 issued in Tehran, born in 1988, has successfully completed his undergraduate studies at the Faculty of Science on July 22, 2011; Therefore, this **Bachelor's Degree – Daytime (Tuition Free)** in the field of **Applied Mathematics** is conferred upon him.

Wishing the above-named success in combining theory & practice, fear of God, actual piety, and acquisition of God's Approval at the service of the people.

[Hologram affixed]

[Signed & Stamped]
Deputy of Educational Affairs and Post-Graduate Studies
Chancellor of University
Ministry of Science, Research & Technology
University of Arak

[QR code attached]
http://portal.saorg.ir/inquiry?code=14033539160847286796
Serial No.: 43229

I certify that this document is a true and accurate translation of the original copy.
Tehran January 9, 2024 Nz./8769

Dr. Majid Nemati
دکتر مجید نعمتی
مترجم رسمی زبان انگلیسی
قوه قضائیه - تهران
شماره پروانه: ۱۰۶۲
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TEST TAKER SCORE REPORT

Note: This report is not valid for transmission of scores to an institution.

Pouya Raoofi

Address: Tehran Mirdamad, Tehran, Iran, Islamic Republic of

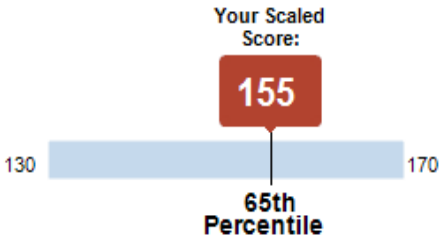
Email: Pouyarfii67@gmail.com
Phone: 98-09120159929
Date of Birth: March 26, 1988
Gender: Male
Intended Graduate Major: Mathematics (0703)

Most Recent Test Date: December 6, 2023

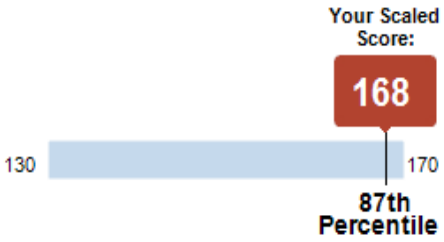
Registration Number: 2576445
Print Date: December 15, 2023

Your Scores for the General Test Taken on December 6, 2023

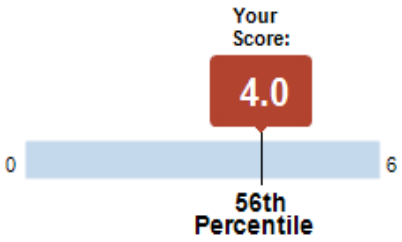
Verbal Reasoning



Quantitative Reasoning



Analytical Writing



Your Test Score History

General Test Scores

	Verbal Reasoning		Quantitative Reasoning		Analytical Writing	
Test Date	**Scaled Score**	**Percentile**	**Scaled Score**	**Percentile**	**Score**	**Percentile**
December 6, 2023	155	65	168	87	4.0	56

Subject Test Scores

You do not have reportable test scores at this time.

Your Score Recipient(s)

Undergraduate Institution

Report Date	Institution (Code)	Department (Code)	Test Title	Test Date

Designated Score Recipient(s)

Report Date	Score Recipient (Code)	Department (Code)	Test Title	Test Date

Pouya Raoofi

Most Recent Test Date: December 6, 2023

Date of Birth: March 26, 1988

Registration Number: 2576445
Print Date: December 15, 2023

About Your *GRE*® Score Report

Score Reporting Policies

With the *ScoreSelect*® option, you can decide which test scores to send to the institutions you designate. There are three options to choose from:

- Most Recent option – Send your scores from your most recent test administration
- All option – Send your scores from all administrations in the last five years
- Any option – Send your scores from one OR as many test administrations in the last five years (this option is not available on test day when you select up to four FREE score reports)

Scores for a test administration must be reported in their entirety. Institutions will receive score reports that show only the scores that you selected to send to them. There will be no special indication if you have taken additional GRE tests. See the *GRE® Information Bulletin* for details. The policies and procedures explained in the Bulletin for the current testing year supersede previous policies and procedures in previous bulletins.

If your scores are not available for any reason, you will see “Not Available” in Your Test Score History.

GRE test scores are reportable for five (5) years following your test date. For example, scores for a test taken on July 3, 2021, are reportable through July 2, 2026. Note: Score recipients will only receive scores from test administrations that you have selected to send to them.

Beginning in September 2023, the subscores on the Physics and Psychology Tests will be reported as percent correct scores (i.e., the percentage of questions in a subscore area answered correctly). Subscores earned after September 2023 should not be compared with scaled subscores earned prior to September 2023.

Percentile Rank (% Below)

A percentile rank for a test score indicates the percentage of test takers who took that test and received a lower score. Regardless of when the reported scores were earned, the percentile ranks for General Test and Subject Test scores are based on the scores of all test takers who tested within the most recent three-year period.

Free GRE Diagnostic Service

For detailed information about your performance on the Verbal Reasoning and Quantitative Reasoning sections of the computer-delivered GRE General Test, access the free GRE Diagnostic Service from your ETS account. This service includes a description of the types of questions you answered right and wrong, the difficulty level of each question, and the time spent on each question. This service is available approximately 15 days after your test administration and for six months following your test administration.

Retaking a GRE Test

You can take the GRE General Test once every 21 days, up to five times within any continuous rolling 12-month period (365 days). This applies even if you canceled your scores on a test taken previously. You can retake a GRE Subject Test once every 14 days.

Note: This policy will be enforced even if a violation is not immediately identified (e.g., inconsistent registration information) and test scores have been reported. In such cases, the invalid scores will be canceled and score recipients will be notified of the cancellation. Test fees will be forfeited.

For More Information

For information about interpreting your scores, see https://www.ets.org/gre/test-takers/general-test/scores/understand-scores.html .

If you have any questions concerning your score report, email GRE Services at **gre-info@ets.org** or call 1-609-771-7670 or 1-866-473-4373 (toll free for test takers in the U.S., U.S. Territories and Canada) between 8 a.m. and 7:45 p.m. (New York Time).

Think Ideally

International Education Consultancy

Number: .....

Date: .....

MyArman

To Whom It May Concern,

I am delighted to write this letter of recommendation for Mr. Pouya Raoofi, who has been an invaluable member of our academic leadership team at MyArman International Higher Education Services since 2022.

In his role as Academic Head, Mr. Raoofi has demonstrated exceptional dedication and expertise in overseeing academic programs, ensuring their alignment with our organization's vision and goals. His strategic thinking and commitment to excellence have significantly contributed to the enhancement of student learning outcomes through the development and implementation of innovative teaching strategies and curricula.

One of Mr. Raoofi's key strengths lies in his ability to manage and lead a team of educators effectively. Under his guidance, the academic faculty has thrived in a collaborative and supportive environment, resulting in a motivated and highly competent team. Mr. Raoofi's commitment to professional development and mentorship has played a pivotal role in nurturing a culture of continuous improvement among our educators.

Furthermore, Mr. Raoofi has demonstrated a keen understanding of the dynamic landscape of higher education. His proactive approach to adapting academic programs to meet the evolving needs of students and the demands of the global education market has been instrumental in positioning MyArman International Higher Education Services as a leader in providing relevant and cutting-edge education.

I am confident that Mr. Pouya Raoofi's exceptional leadership skills, passion for academic excellence, and strategic vision will make a significant positive impact in any academic institution or leadership role he chooses to pursue. I highly recommend him without reservation.

Should you require any additional information or have further inquiries, please do not hesitate to contact me at Azad@myarman.com

Sincerely,

Azad Ghadermarzi

CEO

MyArman International Higher Education Services

myarman Reg.No 26824 Arman Persian Middle East

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No.1, Kaveh Blvd, Panaroma Tower, Apt 715-718, Tehran, Iran

www.myarman.com

Dear Graduate Program coordinator

Thursday, February 22, 2024

I am writing this letter of recommendation on behalf of Pouya Raoofi, who has applied for Ph. D. Programme in Mathematics in Bristol University.

I have known Pouya since September 2011, when he started his M. Sc. studies in Mathematics Faculty of K. N. Toosi University of Technology. His major field was Geometry.

He passed with me the following courses with very good grades,

1- ***Algebraic Geometry I,***
2- ***Algebraic Geometry II,***

Where course materials were based on Igor Shafarevich's book "*Basic Algebraic Geometry I*".

In these courses, he participated actively, and eagerly studied the course materials. He regularly did the assigned problems and homeworks He was continuously asking his questions to understand the concepts of these two courses in a better way and looking for further references to deepen his knowledge. During these activities, he showed that has the necessary motivations to continue his studies toward advanced courses in Mathematics.

I was also the advisor of his Master degree thesis, which was about application of Groebner basis in Coding Theory. Its title was

Algebraic Geometric Codes from Groebner Basis view point.

During preparation of this thesis he could improve his research skills and learned how to work independently.

In addition to the above facts, He speaks English in a good way and of course can write very well in English.

To Sum up, in my opinion, his solid background in graduate courses and what he has learned from the undergraduate courses in mathematics, has made him an appropriate candidate for a Postgraduate Programs and I strongly recommend him. Please do not hesitate to contact me if any further information is needed.

Hassan Haghighi
Associate Professor
K. N. Toosi University of Technology
Faculty Mathematics
P.O. Box 15875-4416, Tehran/ Iran
haghighi@kntu.ac.ir
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3 امضاء دارنده گذرنامه
Holder's Signature

Country of Residence :
ISLAMIC REPUBLIC OF IRAN

کشور محل اقامت:
جمهوری اسلامی ایران

Place of Issue :
IMMIGRATION AND PASSPORT POLICE

محل صدور :
پلیس مهاجرت وگذرنامه

مدرک صدور گذرنامه : ۹۱۷۰۱۴۶۲

2DONLFOHFJBNU-GHD74PMB4FGCG

شماره کلاسه :

Name & Position of Issuing Authority :

نام و سمت صادرکننده :
سرتیپ دوم علی ذوالقدری رئیس پلیس مهاجرت وگذرنامه
BRIGADIER GENERAL ALI ZOLGHADRI
IMMIGRATION AND PASSPORT POLICE CHIEF

۶۱۴۱۸۶۴۱

جمهوری اسلامی ایران
ISLAMIC REPUBLIC OF IRAN
PASSPORT

Type: P Country code: IRN Passport No : A61418641
شماره ملی : ۰۰۸-۳۰۷۵۲۲-۴

Surname : RAOOFI
نام خانوادگی: رؤفی

Name : POUYA
نام: پویا

Father's Name : HOSSEIN
نام پدر: حسین

Date & Place of Birth: 26/03/1988 - TEHRAN
تاریخ و محل تولد: تهران - ۱۳۶۷/۰۱/۰۶

Sex : M جنسیت: مرد
شماره شناسنامه: ۳۹۷۴۵

Date of Issue : 07/02/2023
تاریخ صدور: ۱۴۰۱/۱۱/۱۸

Date of Expiry : 07/02/2028
تاریخ انقضاء: ۱۴۰۶/۱۱/۱۸

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