

Blockchain Recommendation Letters Service

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What is Blockchain?

- Distributed digital ledger
 - Digital information is sent out (not copied) rather than have a central repository
 - Records transactions between entities
 - Incorruptible and verifiable
 - Continually reconciled
- Bitcoin currency was initial purpose
 - Now used extensively for financial transfers
 - Includes encryption private-public keys
- Alternative to transferring things back and forth like legal documents
 - No check-out and check-in

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Blockchain

- Similar issue for healthcare systems
- Who owns your electronic health record?
 - Hospitals claim to own it
 - Primary care physicians maintain one
 - Specialty care doctors maintain one
 - Insurance companies maintain one
 - Shouldn't you own it?
- Blockchain is being considered as a solution for the health records where individual may assert who is allowed to view them
- Health records are too complex for project
- Propose a similar approach for recommendation letters

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Recommendation Letters

- Every graduate school requires 3 letters per applicant
- Many schools consider themselves special and have special questions for recommenders
 - Unnecessary redundancy
 - Lack of standard questions
- Most schools require some free form text as part of the recommendation

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Consider the Numbers

- Undergrads take 3 real courses per semester
- Undergrads have $3 \times 2 \times 4 = 24$ courses
- Large fraction of undergrads apply to grad school at good schools
- Undergrads may apply to 5 to 12 graduate schools

- Large schools have 20,000 undergrads
- Many large schools accept 50% of applicants
- Most of the applicants won't have letters read

- Faculty teach classes of 5 to 1000 students
- Popular faculty will receive requests from $\frac{1}{2}$ of their current or past students $\times (5-12)$

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Legal Issues

- Many recommendation letter services closed down due to legal reasons
- Now most letters have students formally accepting or rejecting whether they can see the letter

- Still a proof-of-ID problem
 - Is the faculty recommender authentic?
 - Does the faculty remember the student?
 - Are they sending the letter to the right school?
 - Who "Owns" the letter?

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No standards of evaluation

- Does Prof X always give positive recommendations?
- Rank “Joe” from 3 years ago as:
 - top 5%
 - top 10%
 - top 15% of something
- Joe earned an A- in a good 2014 class
 - He was a junior and the rest were seniors
 - Is that top 10%?
- Prof X thinks his students are all top 1%
- Prof Y thinks his students are average
- They teach the same students

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Proposal of Solution

- Blockchain standard
 - Transaction for professor-student-school
 - Authentication verified
- UI problem for faculty
 - Fill in standard information automatically
 - Similar questions can be auto-filled
 - New recommendation for new school means filling in the delta
- Faculty standardization
 - Assess based on standardization of faculty by normalizing
- Faculty fill in short form and may receive request directly from school for further information on a student

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Challenges

- Trivial interface for filling in rec letters
 - Automated data entry
- Blockchain security
- Standardization of results by faculty
- UI/UX

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Opportunity

- Gain experience with a very hot technology that is changing business
- Solve a major problem in our higher education system today
- Improve lives of all high school teachers and university educators
- Bring problem-solving and creativity to create a standard for rec letters
- Higher quality reviews
 - Less work and standardization

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