Deloitte.

FY18 Machine Learning Competition

Are you a data scientist looking for a challenge? **Here is an opportunity to test your machine learning skills against the best in the firm.** Create the most powerful algorithm for suggesting AirBnB prices using a dataset of listings that includes the description, the number of bedrooms, the location and other attributes.

Submit your predictions for the chance to win $1,000 and attend the Data Scientist Summit at Deloitte University on April 5th - April 6th!

This year's competition is **predicting the price of AirBnB listings**. Prizes will be awarded for both the **most accurate** and the **most innovative** solutions.

Competition Summary

Full official rules can be found in the Appendix. Participants must read and accept the official rules in order to register for the competition.

Registration

Interested participants will be able to register in teams of up to 3 members from February 2nd until March 2nd.

1. Select a team of up to 3 members
2. On the DLabs website, click on "Register for a Competition"
3. Select "AirBnB Price Prediction Challenge"
4. Enter a team name as well as all team members' email addresses
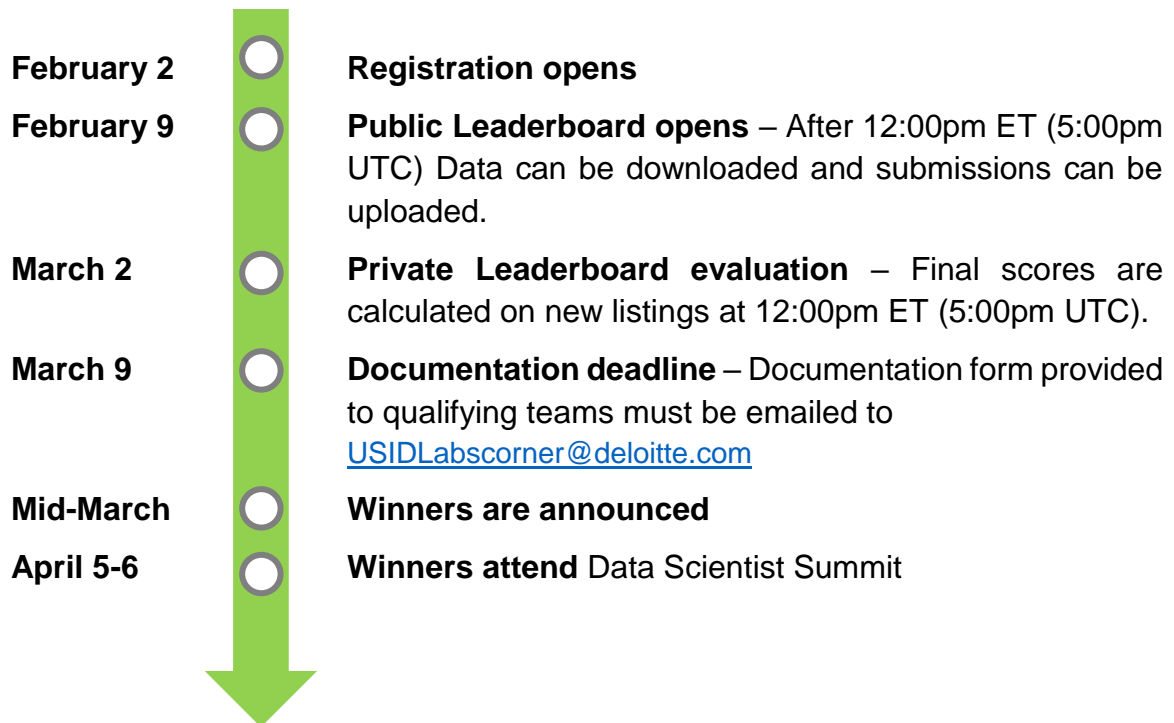5. Accept the Rules and Regulations and press "Submit"

Public Leaderboard

Between February 9th and March 2nd, participants will be able to download the data and upload submissions. Submissions will be scored against a portion of new AirBnB listings and ranked on the Public Leaderboard.

1. After February 9th, scroll to the bottom of the competitions page and select the "AirBnB Price Prediction Challenge"

2. Download the data from the "Data" tab

3. Using the software of your choice, build a model with the training data (train.csv) that predicts the variable "log_price"

4. Run the model on the test dataset (test.csv) to generate predictions in the format found in the sample submission (sample_submission.csv)

5. Make sure that you are logged onto the Deloitte VPN. Submit the predictions in the "Submit Predictions" tab and check your score on the "Leaderboard" tab

6. Be sure to select 2 entries for the final evaluation in the "My Submissions" tab. Otherwise, the top 2 entries on the Public Leaderboard will be selected by default.

Private Leaderboard

Once the Public Leaderboard closes, submissions will be scored per the judging criteria below against a new set of listings and ranked on the Private Leaderboard. All participants in the top 20 on the private leaderboard will be notified by March 3rd and asked to submit proof of their code used for creating their predictions by March 9th in order to be considered for a prize. All submissions should be sent to USIDLabscorner@deloitte.com. Be sure to reference official competition rules for more details.

I. Timeline

February 2	**Registration opens**
February 9	**Public Leaderboard opens** – After 12:00pm ET (5:00pm UTC) Data can be downloaded and submissions can be uploaded.
March 2	**Private Leaderboard evaluation** – Final scores are calculated on new listings at 12:00pm ET (5:00pm UTC).
March 9	**Documentation deadline** – Documentation form provided to qualifying teams must be emailed to USIDLabscorner@deloitte.com
Mid-March	**Winners are announced**
April 5-6	**Winners attend** Data Scientist Summit

II. Evaluation Rubric

Prediction Prize: One winner will be decided based on the submission that scores the highest on the private leaderboard, subject to the Official Rules (see Appendix). The leaderboard is calculated by the "Root Mean Squared Error" of the predictions in relation to the target variable.

Innovation Prize: The second winner must be one of the 20 highest scoring submissions on the private leaderboard and will be evaluated by the Evaluation Panel, in their sole discretion, on four high-level criteria:

a. Innovative use of unstructured data or external data
b. Innovative machine learning techniques
c. Explores the key drivers of the target variable
d. Quality of the solution documentation (visualizations encouraged)

The winner of the Prediction Prize and Innovation Prize are mutually exclusive.

III. Prizes

Both the Innovation Prize and Prediction Prize receive US $1,000 (or local currency equivalent) per winning team. Winners from Deloitte US and Deloitte USI will be given the opportunity to attend the Data Scientist Summit at Deloitte University.

Rules and Regulations

- External data from AirBnB listings beyond what is provided on DLabs, may not be used in this competition. However, external data from other sources is allowed.
- All leaderboard submissions must be verifiable and the code that created the final submission must be sent to USIDLabscorner@deloitte.com in order to be eligible for one of the prizes. If the final submission is suspected of having used external AirBnB data or violating competition rules, it may be disqualified.
- Be sure to read the full official rules (see Appendix)
- For additional questions, please email USIDLabscorner@deloitte.com

IV. Appendix

Machine Learning Competition

OFFICIAL RULES

NO PURCHASE NECESSARY TO ENTER OR WIN.

The Machine Learning Competition (the "Competition") is sponsored by Deloitte Consulting LLP ("Sponsor"). Competition participants agree to be bound by these Official Rules and the decisions of Sponsor and the Sponsor's judges, which are binding and final on matters relating to the Competition. The Competition is subject to all applicable federal, provincial, state and local laws. Void where prohibited by law.

COMPETITION ENTRY DATES: The Competition begins February 9, 2018 at 12:00 PM eastern time ("**ET**") and ends when the Sponsor makes the Announcement (see definition below).

WHO MAY PARTICIPATE:

Open to all employees (excluding interns), partners, principals, and managing directors of Deloitte LLP or its subsidiaries ("**Deloitte**")**,** who are legal residents of the 50 United States, Puerto Rico, India, or Mexico, age 18 and older (if the age of majority in a jurisdiction is different than 18, you must be at least 18 and of the age of majority within your jurisdiction to be eligible to enter).

COMPETITION OBJECTIVE:

The objective of the competition is to submit accurate predictions of a target variable, based on "Root Mean Squared Error," using the provided dataset of feature variables. A prize will also be announced for the most innovative solution (see "**Judging**" section).

To participate in the Competition, participants will have to submit their predictions via the web-portal at https://americas.internal.deloitteonline.com/sites/DLabs/Pages/Home.aspx ("**Website**") (at which time they will be required to acknowledge and accept these Official Rules before proceeding) Please see the "**How to Participate**" section below for more details.

HOW TO PARTICIPATE:
Eligible personnel may participate as an individual or as part of a team. A team must have at least two (2) members and no more than three (3) members. Team member who registering a team is designated as the representative of the team ("team leader"). The team leader will be the contact person for the team and is authorized to make all decisions on behalf of the team with respect to the Competition. A participant cannot participate as both an individual and on a team, or on more than one team.

For the purpose of these Official Rules, a participating individual and a participating team will each be referred to as a "**participant.**"

To enter the Competition, the participant must:
1. Enter the Website
2. Select "Register for a Competition" and choose the "AirBnB Price Prediction Challenge"
3. After February 9th at 12:00pm ET, scroll to the bottom of the competitions page and select the "AirBnB Price Prediction Challenge"
4. Download the data from the "Data" tab. Using the software of your choice, build a model with the training data (train.csv) that predicts the variable "log_price". Run the model on the test dataset (test.csv) to generate predictions in the format found in the sample submission (sample_submission.csv)
5. Submit the predictions in the "Submit Predictions" tab and check your score on the "Leaderboard" tab. You must be logged into the Deloitte VPN. A participant may not upload more than five (5) predictions in a 24 hour period.
6. Be sure to select 2 entries for the final evaluation in the "My Submissions" tab. Only these 2 entries will be considered for final evaluation on the Private leaderboard. In case of no selection by team the top 2 entries based on Public Leaderboard Scores will get selected by default. In case only 1 entry is selected, the top entry based on the Public leaderboard from the remaining submissions with be selected as the second entry for final evaluation. All team members can select the final entries.
7. Participants who upload submissions by March 2nd at 12:00pm will see their rank reflected on public leaderboard and may be eligible for the Prediction Prize (see "**Judging**" section below for more details).
8. All participants in the top 20 on the private leaderboard will be notified by March 3rd and asked to submit proof of their code used for creating their predictions by March 9th in order to be considered for a prize. All submissions should be sent to USIDLabscorner@deloitte.com.

If you are having trouble accessing the Website or uploading a submission, please contact USIDLabscorner@deloitte.com or post on the forum.

Public Leaderboard (February 9th – March 2nd):
Participants may submit entries to see how they perform predicting 50% of the test dataset. All code for the entries must be verifiable by the Sponsor.

Private Leaderboard (March 2nd – March 9th):
Once the Public Leaderboard closes at 12:00pm ET, submissions will be scored per the judging criteria below against the remaining 50% of the test dataset and scored on the Private Leaderboard. Leading entries must send their verifiable solution that generated their predictions as well as accompanying documentation to the Sponsor via email (see above) by March 9th. Accompanying documentation must include a form provided by Sponsor on the Website that describes the solution.

External Data
External data from AirBnB listings beyond what is provided on DLabs, may not be used in this Competition. However, external data from other sources is allowed.

Participants who provide comments on other participants' entries on the forum understand that such comments may be used by any participant in connection with any entry; that such comments are subject to the "Assignment of Rights" section below; and that submitting comments does not make them eligible for a prize.

ENTRY REQUIREMENTS: Incomplete entries, including but not limited to those entries that do not address the requirements listed in the "**Competition Objective**" section above or comply with the "**Content Guidelines**" section below, will not be eligible. For purposes of these Official Rules, "submission" of an entry occurs when an entry is either submitted onto the Website or received via email by the Sponsor by the due dates indicated in the How to Participate section above.

By submitting an entry or comment, participant understands and grants to Sponsor permission for his/her entry or comment to be posted on the Website and distributed internally and externally for various purposes and as otherwise set forth in these Official Rules. Released Parties (as defined below) are not responsible for any unauthorized third party use of any entry or comment. Released Parties do not guarantee the posting of any entry or comment. Participants agree that they will not disclose or use the entry for any other purpose, including, without limitation, posting the entry or comment to any online social networks, without the express consent of Sponsor in each instance.

An entry must be the original work of the participant; may not have been previously published; may not have won previous awards; and must not infringe upon the copyrights, trademarks, rights of privacy, publicity or other intellectual property or other rights of any person or entity **(including any rights that may have been assigned to a client pursuant to an engagement letter with Sponsor or its affiliates)**. If the entry contains any material or elements that are not owned by the participant and/or which are subject to the rights of third parties, the participant is responsible for obtaining any and all releases and consents necessary, and in a form acceptable to Sponsor, to permit the use and exhibition of the entry by Sponsor in the manner set forth in these Official Rules.

ASSIGNMENT OF RIGHTS: Participant hereby acknowledges that the entry, comments (including videos and photos) and all other materials of every kind whatsoever created by participant relating to the Competition (collectively, the "**Work**") are "works made for hire" (as that term is used in the United States Copyright Act) for Sponsor; that Sponsor is the sole and exclusive owner, in perpetuity and throughout the universe, of all right, title and interest in and to the Work, including without limitation all copyrights in and to the Work (and all renewals and extensions thereof now or hereafter provided by law) and all the rights therein and thereto, including all moral rights where such may exist by law; and that Sponsor may exploit, modify, edit and publish the Work (and all rights therein) in any manner throughout the world without restriction. Without limiting the binding effect of any of the foregoing provisions, in the event that any part of the Work is not deemed to be a "works made for hire" for Sponsor, then participant hereby irrevocably and exclusively assigns all copyright and other rights to the Work to Sponsor (or, if any applicable law prohibits or restricts such assignment, participant hereby grants to Sponsor an irrevocable, perpetual, royalty-free, transferable license of right, title and interest in and to such Work, throughout the universe, in perpetuity, for all purposes, in any and all media, whether now known or hereafter devised).

SIMILAR IDEAS: By submitting an entry or comment, participant acknowledges and agrees that Sponsor may obtain many submissions under this Competition and that such entries or comments may be similar or identical in theme, idea, format or other respects to others submitted under this Competition and/or other contests staged and/or sponsored by the Sponsor, and participant waives any and all claims participant may have had, may have, and/or may have in the future, that any composition, video and/or other works accepted, reviewed and/or used by the Sponsor (or its respective designees) may be similar to his/her entry or comments. Participant acknowledges and agrees that the Sponsor does not have now, nor shall have in the future, any duty or liability, direct or indirect, vicarious, contributory, or otherwise, with respect to the infringement or protection of any copyright rights and other rights to the Work that participant may have in and to participant's entry or comments. Sponsor may choose to merge or combine the similar submissions, including asking individuals or teams to work in parallel or together to realize the solution ("solution contributors"). Sponsor may further choose to award some or all of the solution contributors and such award shall be at the sole discretion of the Sponsor.

CONTENT GUIDELINES:

All leaderboard submissions must be verifiable and the code that created the final submission must be sent to the Sponsor in order to be eligible for a prize. It must be clear in the code how the final model was chosen

and predictions must be made systematically. If the final submission is suspected of having broken any rules it may be disqualified.

Sponsor reserves the right in its sole discretion not to choose winners for the Competition.

Posts to the forum on the Website must comply with the following content guidelines:

- CONTENT CANNOT CONTAIN CLIENT NAMES, CLIENT CONFIDENTIAL INFORMATION OR ANY OTHER REFERENCE IDENTIFYING A CLIENT;
- Content cannot contain music;
- Content cannot be sexually explicit or suggestive, unnecessarily violent or derogatory of any ethnic, racial, gender, religious, professional or age group, profane or pornographic, or contain nudity;
- Content cannot promote alcohol, illegal drugs, tobacco, firearms/weapons (or the use of any of the foregoing), any activities that may appear unsafe or dangerous, or any particular political agenda or message;
- Content cannot be obscene or offensive, endorse any form of hate or hate group;
- Content cannot defame, misrepresent or contain disparaging remarks about Sponsor, its products or services, or other people, products or companies;
- Content cannot contain trademarks, logos or trade dress (such as distinctive packaging or building exteriors/interiors) owned by others, or advertise or promote any brand or product of any kind (other than the Sponsor's or its affiliates'), without permission, to the extent permission is necessary;
- Content cannot contain any personal identification, such as license plate numbers, personal names, e-mail addresses or street addresses;
- Content cannot contain copyrighted materials owned by others (including photographs, sculptures, paintings and other works of art or images published on or in websites, television, movies or other media) without permission unless Sponsor has determined permission is not necessary;
- Content cannot contain materials embodying the names, likenesses, photographs, or other indicia identifying any person, living or dead, without permission;
- Content cannot communicate messages or images inconsistent with the positive images and/or goodwill to which Sponsor wishes to associate;
- Content cannot depict a violation of any law and cannot itself be in violation of any law or otherwise; and
- Content cannot otherwise violate any policies or practices of Deloitte LLP, any of its subsidiaries, or Deloitte Touche Tohmatsu Limited.

Sponsor reserves the right to remove any comment from the Website that does not conform to the Content Guidelines for any reason, it its sole and absolute discretion.

JUDGING:

The judging panel will include PPMDs of Sponsor or its affiliates (the "**Evaluation Panel**"). **Both prizes are subject to the verifiability of the code used to create predictions.**

Prediction Prize: One (1) winner will be chosen based on the submission that scores the highest on the public leaderboard, subject to these rules. The public leaderboard is calculated by the "Root Mean Squared Error" of the predictions in relation to the target variable.

Innovation Prize: One (1) winner will be chosen from the 20 highest scoring submissions on the private leaderboard (exclusive of the Prediction Prize winner) and will be evaluated by the Evaluation Panel, in their sole discretion, on four high-level criteria:

- a. Innovative use of unstructured data or external data
- b. Innovative machine learning techniques
- c. Explores the key drivers of the target variable
- d. Quality of the solution documentation (visualizations are encouraged)

The winner of the Prediction Prize will not be considered for the Innovation Prize.

The winners of the Competition will be chosen by the Evaluation Panel in their sole discretion. **The Evaluation Panel's and Sponsor's decisions are final and binding on all matters.**

WINNER NOTIFICATION:

Participants that are Winners of either the Prediction Prize or the Innovation Prize will be announced sometime after the private leaderboard closes (the "**Announcement**").

Winners of the Competition may be required to sign additional documents that may be required by Sponsor, which, if required, must be received fully-executed within seven (7) days of Sponsor's request or the participant may be disqualified. Winners must be current, active employees or principals of Deloitte in good standing at time of the Announcement and at the time of the prize award, as determined by Sponsor in its sole discretion.

In the event it is determined that a winner has not complied with these Official Rules, or has failed to execute and return any required documents within the specified time period, or has made false statements in any document required by Sponsor, then such winner will be disqualified and required to promptly return to Sponsor his/her prize. If a winner is disqualified for any reason, at Sponsor's discretion, another participant may be declared the alternate winner. Only if an entire team is disqualified will an alternate winner be selected. The disqualification of one team member will not result in disqualification of an entire team. Sponsor reserves the right in its sole discretion not to choose any winners for the Competition.

PRIZES:

Prediction Prize winner receives: US $1,000 (or local currency equivalent)

Innovation Prize winner receives: US $1,000 (or local currency equivalent)

Winners from Deloitte US and Deloitte USI may be given the opportunity to attend their solution at the Data Scientist Summit at Deloitte University on April 5th – April 6th. Travel expenses associated with attendance at DU will be covered by the Sponsor. Employees must obtain permission from their supervisor to attend the Data Scientist Summit at DU.

Sponsor will distribute the prize money to a winner upon execution of required forms by the winner (and, where a winner is a team, by each individual on the team). Where the winner is a team, the prize money will be divided evenly among all of the individuals on the team.

Prize awards are subject to verification of eligibility and compliance with these Official Rules. Prizes are awarded on "as is/where is basis" with no warranty or guarantee, either express or implied by the Sponsor. A winner may not substitute, assign or transfer his/her prize, but Sponsor reserves the right, at its sole discretion, to substitute a prize of comparable or greater value. Winner is responsible for all federal, state and local taxes associated with acceptance and use of a prize as well as any other costs and expenses associated with prize acceptance and use not specified herein as being awarded. Actual prize value may be included in the gross income for winner and in such case, may be subject to all applicable payroll deductions. All prize details/value are at Sponsor's discretion.

GENERAL CONDITIONS:

Released Parties (as defined below) are not responsible for any lost, late, incomplete, inaccurate, stolen, misdirected, undelivered, delayed or garbled entries or email; or for lost, interrupted or unavailable network, server, Internet Service Provider (ISP), Website, DeloitteNet, or other connections, availability or accessibility or miscommunications or failed computer, satellite, telephone or cable transmissions, lines, or technical failure or jumbled, scrambled, delayed, or misdirected transmissions or computer hardware or software malfunctions, failures or difficulties, or other errors or malfunctions of any kind whether human, mechanical, electronic, network typographical, printing or otherwise relating to or in connection with the Competition, including, without limitation, errors or malfunctions which may occur in connection with the administration of the Competition, the processing or judging of entries, the announcement of the prizes or in any Competition-related materials.

Released Parties are also not responsible for any incorrect or inaccurate information, whether caused by site users, tampering, hacking, or by any equipment or programming associated with or utilized in the Competition.

Released Parties are not responsible for injury or damage to participant's or to any other person's computer related to or resulting from participating in this Competition or downloading materials from or use of the Website and/or DeloitteNet. Persons who tamper with or abuse any aspect of the Competition, Website, or DeloitteNet, as solely determined by Sponsor, will be disqualified.

Should any portion of the Competition be, in Sponsor's sole opinion, compromised by virus, worms, bugs, non-authorized human intervention or other causes which, in the sole opinion of the Sponsor, corrupt or impair the administration, security, fairness or proper play, or submission of entries or comments, Sponsor reserves the right at its sole discretion to suspend, modify or terminate the Competition and select the potential winners from all eligible, non-suspect entries received prior to action taken.

Participants, by participating, agree that Deloitte LLP, Deloitte & Touche LLP, Deloitte Tax LLP, Deloitte Financial Advisory Services LLP, Deloitte Consulting LLP, Deloitte Transactions and Business Analytics LLP, Deloitte Services LP, Deloitte USA LLP, Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("**DTTL**"), and any and all DTTL associate and member firms, all their respective, past, present and future parent companies, subsidiaries, affiliates, divisions, related entities, joint venturers, subcontractors, agents, attorneys, insurers, subrogees, co-insurers and reinsurers, all their respective, past, present and future officers, directors, employees, members, partners, principals, shareholders and owners, and all their respective heirs, executors, administrators, personal representatives, predecessors, successors, transferees and assigns (collectively, the "**Released Parties**") will have no liability whatsoever for, and shall be held harmless by participants against, any liability for any injuries, losses or damages of any kind, including death, to persons, or property resulting in whole or in part, directly or indirectly, from acceptance, possession, misuse or use of the prize or participation in this Competition. Solely as it pertains to residents of India, the above release does not apply to claims against the Released Parties for damages because of personal injury or death, and to claims for damages in case of intent or gross negligence by a Released Party.

Each winner, by acceptance of prize, except where legally prohibited, grants permission to Sponsor and its designees to use his/her name, address (city and state), photograph, voice and/or other likeness and prize information for advertising, trade and promotional purposes, in any manner, without further compensation, in all media now known or hereafter discovered, worldwide, and on the Internet and world wide web, in perpetuity, without notice or review or approval.

In the event of a dispute regarding entries received from multiple users having the same e-mail account, the authorized subscriber of the e-mail account at the time of entry will be deemed to be the entrant and must comply with these rules. Authorized account subscriber is the natural person who is assigned the e-mail address by the Internet Service Provider (ISP), on-line service provider, or other organization responsible for assigning e-mail addresses by or on behalf of the Sponsor or any Released Party or recognized by the Sponsor or any Released Party.

GOVERNING LAW/DISPUTES:

By entering the Competition, participants agree that (i) any and all disputes shall be governed by the laws of the State of New York, USA to the extent permitted by law; (ii) any legal action or proceeding relating to the Competition shall be instituted in a state or federal court in New York City, New York, USA; and (iii) they will submit to the exclusive jurisdiction of, and agree that venue is proper in, these courts in any such action or proceeding, to the extent permitted by law.

WINNERS LIST:

Final winners' names will be available approximately 1 week after the Announcement.

SPONSOR:

Deloitte Consulting LLP, 30 Rockefeller Plaza, New York, NY 10112.