Human-Computer Interaction IMDb Prototype Usability Testing

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Word Count: 2498

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Modified HTML files available from Andrew Reece at a.z.m.reece-14@student.lboro.ac.uk

Introduction

A previous study (Reece *et al.*, 2015) was conducted to find usability problems with common tasks users perform on the current version of the International Movie Database (IMDb) website, which compiles information on TV shows, films and actors. The tasks were to leave a review for the TV show *Friends*, find how well ranked the film *Kill Bill Vol .01* is, and to add 3 films to a 'watchlist' (a concept analogous to a playlist or 'to do' list for films and TV shows). The tasks were both tested by users and evaluated using some common design heuristics.

There were both empirical and heuristic problems noted with the process required for leaving a review. There were multiple paths followed by at least one participant, all of which had usability issues:

- 1) There was no easily available option to leave a review in the section that showed ratings, allowed users to leave their own ratings and had links to reviews that had been posted (through which many users spent time visually scanning). Instead, users had to go through the user reviews link, and find a text link at the end of multiple screens' worth of text reviews.
- 2) There was another text link at the bottom of the 'User Reviews' subsection that was again surrounded by a lot of text and required scrolling multiple pages to reach.
- 3) There was a 'Write Review' button in the 'Contribute to This Page' subsection, which although much more conspicuous, was right at the bottom of the page, below many screens' worth of content.

Many users were unsure what they were doing, scrolling past an appropriate section multiple times before finding the link they needed, and not all participants were able to complete the task at all. The ease of use and frustration scores for this task were both mediocre, and simple changes made to the interface would likely make large improvements.

The second task was another that not everyone completed, despite the required information being above the fold once the film's page had loaded. This was thought to be due to a low signal-noise-ratio and the lack of semantic grouping with other descriptors of the film's critical reception. There were also potential issues of the users not understanding which 'rank' they were looking for, as multiple ranks could be seen. Most users selected a different metric before they identified the film rating rank. This had the worst ease of use and frustration ratings of the 3 tasks and took the longest, despite the number and complexity of steps involved being the lowest.

Unlike the other tasks, all users successfully completed the task of adding the 3 films to their watchlist, and it was performed in a comparable time, or faster than, the other two tasks, despite requiring navigation through many more pages. The ease of use and frustration were the highest and lowest of the tasks at 76% and 22% mean ratings respectively. Once users had managed to add their first film to the watchlist, regardless of how difficult they found it, all were very direct and fast in adding the second and third.

There are a number of different ways of prototyping a redesign of a website, suited to testing different considerations of its design: paper prototypes are useful for quickly testing task flow (as only a simplistic representation of the content is required), but the first 2 tasks from the previous study were difficult in large part due to the concentrated visual search required to find the necessary components in their surroundings. As a result, a more visually representative prototype is required to test them. Steve Krug (2010) recommends to opt for tweaks rather than complete overhauls to the design because, among other reasons, existing users tend not to like drastic changes and redesigns are prone to breaking unconsidered features that were previously working. Consequently, with the specifications that the prototype should look similar to a possible final site and that the changes made should be relatively small, it was decided that it would be best for the prototype to be a modification of the IMDb pages' HTML, with javascript-based interactivity and CSS styling where necessary. The objective of this study, therefore, was to modify a local copy of the web pages based on usability heuristics, and evaluate the new prototype with a number of users attempting tasks similar to the previous study. Following advice from Krug (2010) and Nielsen (2000), the prototype will be considered as the first of a number of iterations, rather than representative of a final design.

Changes made

The issues to be addressed appeared to be due to low visibility, low signal-noise-ratio, and a lack of semantic grouping with the features that users expected, and so this is what the changes have attempted to remedy.

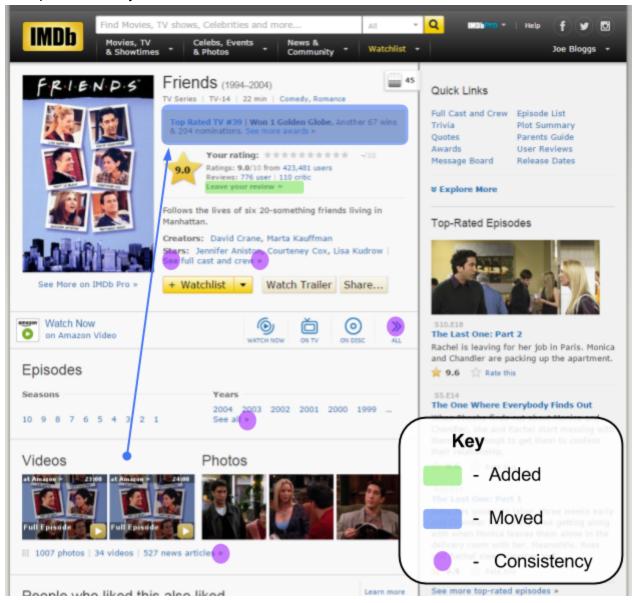


Figure 1: Changes made above the fold to the new design

The first change was to include a "Leave your review »" link (green in Figure 1) in the section with the other rating and review information in which users had expected there to be a link. This improved the semantic grouping as it was now in the same section displaying existing reviews and ratings and allowing users to leave their rating, and makes the action available above-the-fold, minimising interaction cost (Nielson, 2010; Schade, 2015). The wording, capitalisation and the

inclusion of the double chevrons were chosen following the consistency heuristic (Nielsen, 1995; Schneiderman): using the possessive "your" rather than "a" based on "Your rating"; the imperative verb "Leave" based on "See full cast and crew »" (purple in Figure 1) and to signal that the user would be doing something; the double chevrons ("»") were included because they indicate an action that takes the user to a different page (purple in Figure 1). The text is left small to leave it lower in the visual hierarchy than "Your rating" because ratings, as they are taken in aggregate, are more important to get in large numbers than reviews. It could be enlarged, but it would then draw focus from the elements around it (Nielsen, 1995). This may ultimately be preferable, however Krug (2010) suggests making changes small at first and making them larger only when necessary.

The move of the ranking/awards section (blue in Figure 1) was made as its previous position grouped it with nothing related to it. The new position groups it with features with the semantic association of "critical reception". It was placed above the ranking for 2 main reasons. Its highlighted background and large, bold text, as well as the high value of awards for media, suggested that this was information that was intended to be high in the visual hierarchy, which the higher position typically gives (Djamasbi, Siegel and Tullis, 2011). The type of information contained is semantically closer to the meta-information about the show that exists above the rating section (including the runtime, the age rating and the genres it spans) than the summary description of the contents of the show below the review box. Consequently, the awards should act as a bridging section between the meta-information and the critical reception.

It was acknowledged that the addition of features at the top add extra visual information to parse in that area, but it was expected that the improvements as outlined above in terms of logical positioning would outweigh the drawbacks. The test would determine the veracity of this.

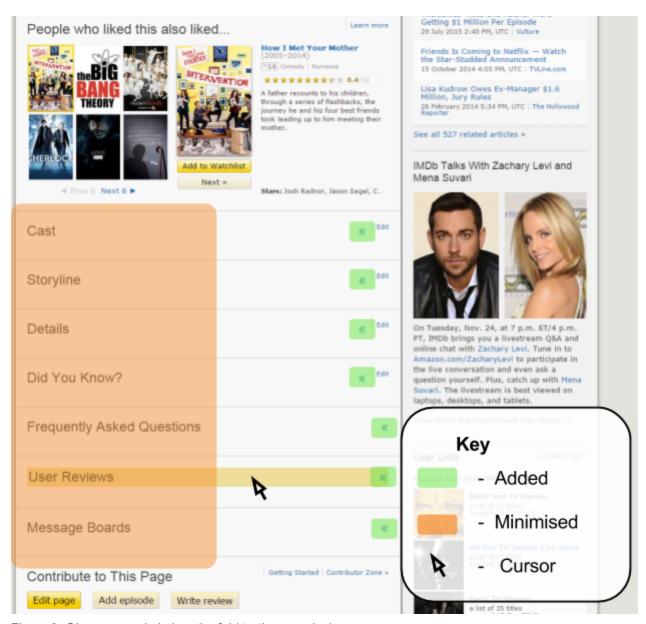


Figure 2: Changes made below the fold to the new design

To improve the visibility of the information about the main page's show and reduce the visual noise on screen, the subsections of the main page were minimised into an accordion-style layout (orange in Figure 2), wherein the sections expand and contract when clicked (see Appendix E for the script used). This should allow users to jump to an appropriate section of the hierarchy without scrolling and searching through multiple pages, heeding Nielsen (2010) (see Appendix D for the original). The expandability was indicated by highlighting the section, changing the cursor to an interactive pointer (see Appendix F) and by including inward double chevrons (green in Figure 2), a common indicator for accordions. This, as Norman (2002) recommends, presents the user with the status of the system (using the metaphor of "in" and "down") and affords clicking.

Participants

The n=6 (following Nielsen, 2000) participants were 17-25 years old, an even mix of genders and were convenience sampled from Loughborough university, as with the previous study. Participants had not taken part in the previous study, to ensure they had comparable experience levels to those who had. Having been explicitly asked to do the similar tasks in that study would have damaged this.

Method

The method followed the previous study closely to make the two sets of results comparable. Starting from the homepage could not easily be replicated locally; opening the previously-unseen tabs was used instead to simulate page loading.

Equipment

- Computer
 - Running Windows 7
 - Monitor of 1920x1080 resolution
 - Connected to the internet
 - With the software
 - Google Chrome
 - SPSS Statistics 22
- Stopwatch
- Video Camera

Procedure

- Open Google Chrome and maximise window
- Ensure a blank page, the local Friends page and the local Kill Bill page are open in tabs
- Present participant with consent & instruction sheet (see Appendices A and B) and ask them to fill them out if they are comfortable
- Answer any of their questions that don't directly aid in their task
- Start filming with the screen and desk area in frame
- Ask participant to adjust the environment to their personal preference
- Ask participant to read task 1 (review Friends), and begin when ready by switching to the Friends tab
 - Start timer
 - Stop timer once user clicks into review text area
- Ask participant to read task 2 (state Kill Bill's ranking), and begin when ready by then switching to the Kill Bill tab

- Start timer
- Stop timer once user states the correct number
- Stop filming
- Present participant with questionnaire (see Appendix C)
- Show changes from old website to stimulate comments
- Thank participant for their time and help

Quantitative Results

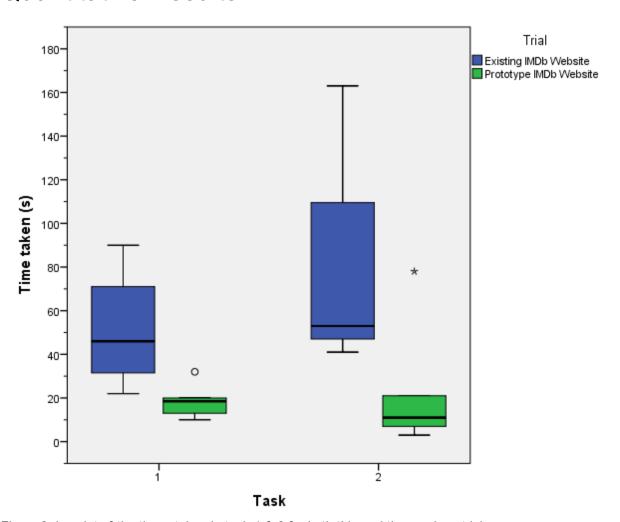


Figure 3: boxplot of the times taken in task 1 & 2 for both this and the previous trial

All of the users (except for one outlier for each task) took less time than the fastest users of the existing website for both tasks (see Figure 3). Part of this time difference can be accounted for by the slightly different task structure - the user did not start on the homepage as they did with Reece et al. (2015) - however, a review of the video footage of that study revealed that users consistently took less than 10 seconds to navigate from the homepage to the film/show page, and commonly took less than 5. Even conservatively accounting for this discrepancy, the time difference between

trials is stark: the median time reduction is 17s (27s) for task 1 and 32s (42s) for task 2. The reduction in time appeared to be due to less time spent searching for the right link/button.

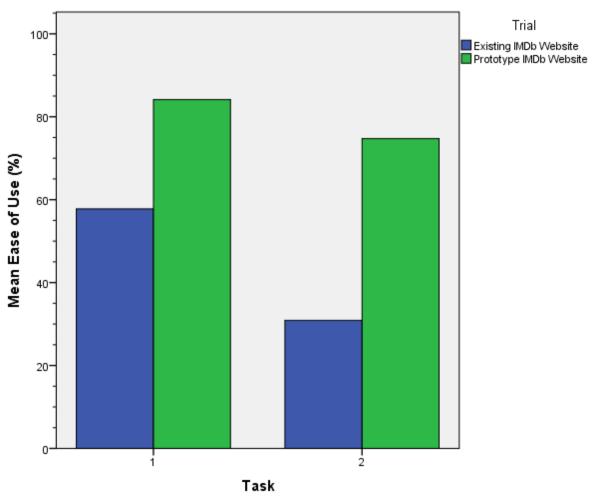


Figure 4: graph comparing mean ease of use between the 2 trials for both tasks

The prototype was found to be easier to use than the existing IMDb website for both tasks (see Figure 4). Reported ease of use for the task of leaving a review was 146% (58% to 84%), and for finding Kill Bill's rank was 241% (31% to 75%), of the previous trial, more than doubling its subjective rating.

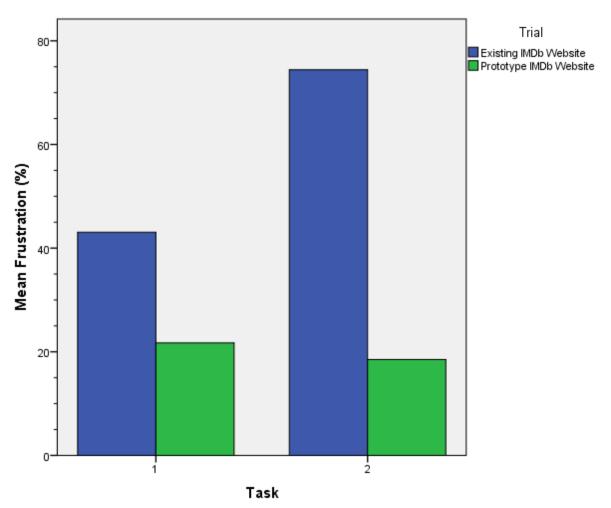


Figure 5: graph comparing mean frustration between the 2 trials for both tasks

There was a marked decrease in frustration between the different trials for both tasks (see Figure 5). Users reported 50% as much (43% to 21.5%) frustration leaving a review in the prototype as in the existing website, and reported 25% (74% to 18.5%) of the frustration in finding Kill Bill's rank in the prototype as they did in the existing website.

The improvement in ease of use and frustration is unlikely to have been caused by not starting on homepage, as this is something that nobody in the previous trial struggled with; all users immediately seemed to know what to do.

The appeal rating changed from 50% to 55%, which is in the right direction, but is not large enough to make conclusive statements with these small participant numbers.

Discussion

In terms of speed of use, perceived ease-of-use and perceived frustration, the prototype website design appeared to be an improvement over the existing website for both tasks. Unlike in the previous study, all users completed both tasks. As the prototype very closely followed the form of the website (indeed many of the participants were surprised that the pages tested were not the ones on the internet), the ecological validity can be considered very high for this study.

Multiple features were changed at once, so it cannot be conclusively determined which changes caused the improvements, however combining the quantitative results with comments from, and observations of, the participants, some conclusions can be inferred. A third of users used the "Leave a review" link in the ratings section; they looked in the rating section for it, suggesting the semantic grouping helped them. Other users commented that they "did not see" the link, or that it "gets lost in blue hyperlinks", and so would clearly benefit if the action was more visible. They also commented that they would prefer a button for this action, and that it was important enough a feature to warrant one. Visibility could appropriately be improved by making the text larger and bolder or on a button in the same section, or (although it may worsen the semantic mapping), including a button alongside the buttons corresponding to key actions for this film (add to watchlist, watch trailer etc). The other users left a review either via the link in the User Reviews section, or via the button in the Contribute to This Page section. These were both improved by the accordion design (users commented on how much they liked this change) as they had to scroll less to find the appropriate section (particularly useful for small screens, such as on phones) and could identify the required actions due to less information vying for their attention (improved signal-noise ratio). The script used (see Appendix E) would be simple to modify such that information does not become unavailable to users who do not have javascript enabled.

Moving the awards section to a more semantically appropriate one appears to have helped users, who now had a starting point for where to look for ranking. While there was a great improvement, there was still some confusion with the popularity rating ("45" near top of Figure 1), and the area was considered to be "busy", with "too much stuff", which could be clarified and simplified in a follow-up along with reduced extraneous content in the sidebar.

As a methodological note, it was found that most participants were happy to respond to stated questions, but were unlikely to make additional comments unless prompted, at which point they would almost invariably have a valuable comment to make. This emphasizes the importance of asking the right questions and encouraging comments from participants. The study corroborates the effectiveness of applying the aforementioned heuristics for improving usability, but also shows that improvements of one can have detrimental effects on others.

To conclude, while scope exists for increasing usability in further iterations, for both tasks, and with all metrics considered (including comments) the prototype markedly improves on the existing design.

References

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Appendix A: Participant Information Sheet



Study of User Experience on IMDb PARTICIPANT INFORMATION SHEET

The purpose of this study is to evaluate the user experience of changes made to the IMDb website in terms of 2 distinct tasks.

You will be asked to attempt the tasks below, and speak out loud any time the website makes it difficult to complete the task. Please attempt to use the site as you would in a real-life situation.

During this time the screen and your hands will be filmed.

If you have any questions, please ask now. Please note that we will not answer any questions that aid the completion of the tasks.

Please read the tasks below and sign the consent form if you are willing to continue.

Feel free to adjust the environment to something more comfortable (e.g. change screen height/angle, chair height etc).

The site will be logged into a test account.

Task 1 - Leave a review

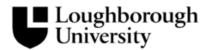
- Starting from a new tab in Google Chrome, switch to the other (IMDb) tab
- Go through the process of leaving a review for the TV show Friends
- The task is finished at the point that you click on the review text box

Navigate back to a new tab on Google Chrome

Task 2 - Find a film's rank

- Films are ranked based on their IMDb rating
- Find what number rank Kill Bill Vol .01 is
- . The task is finished at the point that you say the correct number out loud

Appendix B: Consent form



INFORMED CONSENT FORM (to be completed after Participant Information Sheet has been read)

The purpose and details of this study have been explained to me. I understand that this study is designed to further scientific knowledge and that all procedures have been approved by the Loughborough University Ethics Approvals (Human Participants) Sub-Committee.	Yes 🗆	No 🗆	
I have read and understood the information sheet and this consent form.	Yes 🗆	No 🗆	
I have had an opportunity to ask questions about my participation.	Yes 🗆	No 🗆	
I understand that I am under no obligation to take part in the study.	Yes 🗆	No 🗆	
I understand that I have the right to withdraw from this study at any stage for any reason, and that I will not be required to explain my reasons for withdrawing.	Yes 🗆	No 🗆	
I understand that all the information I provide will be treated in strict confidence and will be kept anonymous and confidential to the researchers unless (under the statutory obligations of the agencies which the researchers are working with), it is judged that confidentiality will have to be breached for the safety of the participant or others.	Yes 🗆	No 🗆	
I agree to participate in this study.	Yes 🗆	No 🗆	
I agree that the video footage taken during this study can be stored for future research.	Yes 🗆	No 🗆	
If No to above, I confirm that the video footage taken during this study can only be used for this study and should be disposed of upon completion of the research.	Yes 🗆	No 🗆	
Your name			
Your signature			
Signature of investigator			
Date			

Appendix C: Questionnaire

Questionnaire

Very difficult

How frequently do you normally use the IMDb website?

Never	Once per year	Once per	Once per	Multiple times	
		month	week	per week	

Do you need corrective lenses?

Please mark along the line according to how easy to complete you found Task 1

Very Easy

Please mark along the line according to how easy to complete you found Task 2

Very difficult

Very Easy

Please mark along the line according to how frustrating you found Task 1

Not at all frustrating

Very frustrating

Please mark along the line according to how frustrating you found Task 2

Not at all frustrating

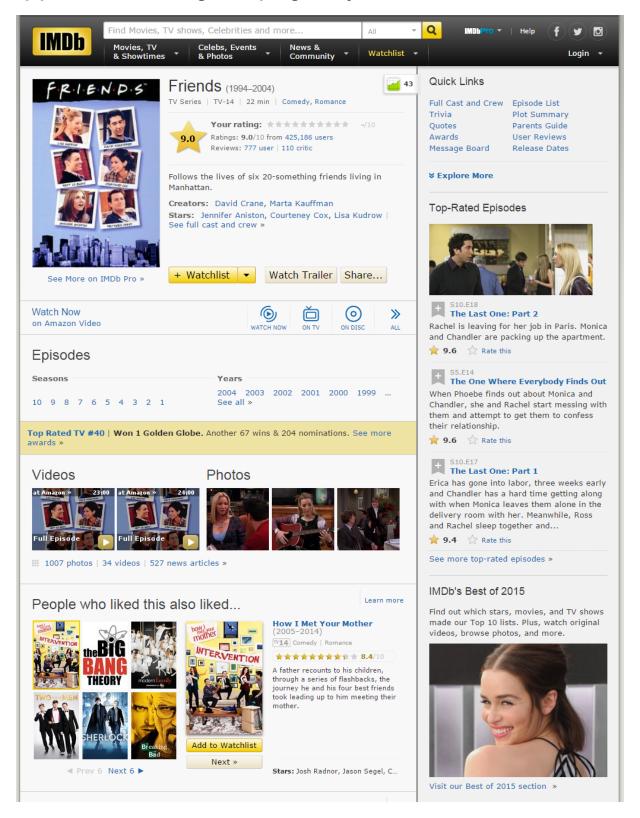
Very frustrating

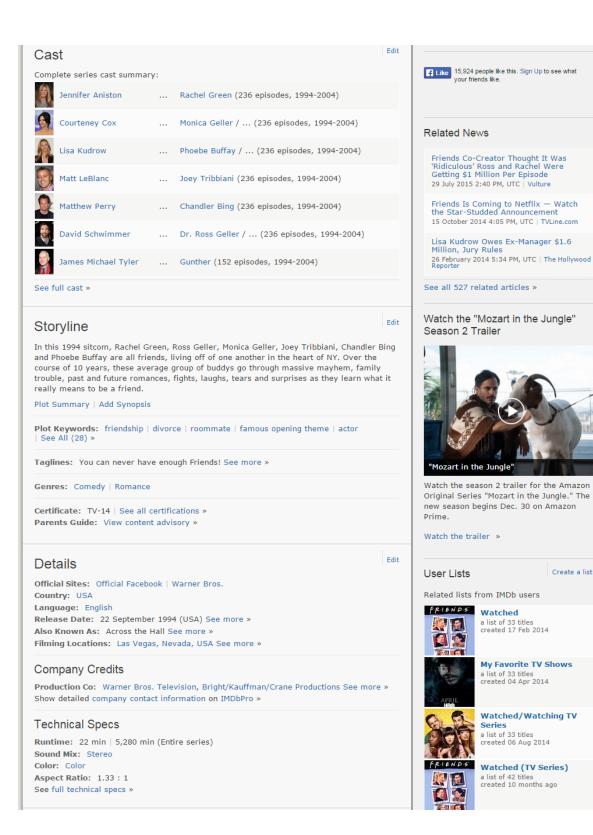
Please mark along the line according to how visually appealing you found the IMDb website

Not at all appealing Very appealing

Any further comments? Feel free continue on the back of this page.

Appendix D: Original page layout





Create a list »

Did You Know?

Trivia

The story line of Phoebe having her brother's babies was thought up when Lisa Kudrow announced her real-life pregnancy. However, as she was not big enough to be having triplets, and the show was shot in "TV time", the costumers had to pad her to make her look bigger for the show. See more

In the final episodes when Rachel gets ready to leave the country for Paris for her new job she says how she worked for Ralph Lauren for 10 years, but she didn't start that job until 1999 and the show ended in 2004, therefore she couldn't have worked there for 10 years.

Quotes

Jill Green: All right, I'm leaving. Because I'm not going to spend one more day with someone whose out to sabotage my every move. That's you Rachel. Rachel: Yeah, I got that.

Crazy Credits

When the "The One That Could Have Been" was divided into two parts for syndication, a sequence was added that had the ending credits superimposed. It shows fat Monica dancing to some music while eating some food. The original hourlong airing of "The One That Could Have Been" did not have the credits at the end of the first half hour and this scene was not involved. See more »

Connections

Referenced in The Tonight Show Starring Jimmy Fallon: Kerry Washington/Carson Daly/Julian Casablancas & the Voidz (2014) See more »

Soundtracks

Smelly Cat (uncredited) (recurring song) Performed by Lisa Kudrow See more »

Frequently Asked Questions

Q: What are The Friend's Addresses?

O: What are the differences between the TV-Version and the DVD Version?

Q: What are the words for Phoebe's song "Smelly Cat"?

See more (Spoiler Alert!) »

User Reviews

Where are YOUR Friends? 2 March 2005 | by Voque. (United States) - See all my reviews

I've been reading a lot of these comments. Some people don't like the show...claiming it to be unrealistic or that the plot lines get boring.

I didn't discover Friends until a year or two ago (thanks to MY friends) but I ADORE the show in syndication and I hope to own the DVDs. Its damn funny and no one can deny it. Except for stiffs. And whats best about Friends is that its REAL.

Ross and Rachel getting old? How could it? Do relationships get old in real life? No, they're ongoing, sometimes stagnating, sometimes changing. Thats REAL.

This show is about 6 people who love each other like family...which I must say as an 18 year old... is very real. Once you hit your late teens - early twenties...things begin to change. You grow both closer to and further from your biological family, and as you reach more independence, you adopt another family of your own: YOUR FRIENDS.

We may not all sit in coffee shops, but we all LOVE our friends like they were blood. That's what this show is about. Makes you all warm and fuzzy (and sore from laughing) inside. And as a show: FRIENDS will always be a part of MY family.

414 of 504 people found this review helpful. Was this review helpful to you? Yes No



Review this title | See all 777 user reviews »



I V SHOWS a list of 38 titles created 1 month ago

See all related lists »

Connect with IMDb



Be the first of your friends to like this





Share this Rating

Title: Friends (1994-2004)



Want to share IMDb's rating on your own site? Use the HTML below.

Show HTML

View more styles





Favorite Number One Rated **Television Series**



Face-Off: Ross & Rachel vs Chandler & Monica



Face-Off: Seinfeld vs.





Top 25 TV Shows From the Last 25 Years

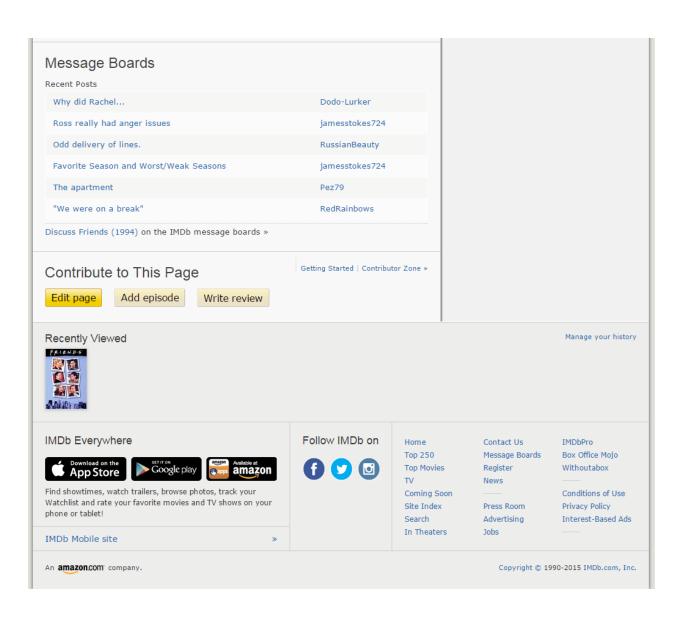


Unseen Characters



Sad TV Show Mashups

See more polls »



Appendix E: Javascript toggling section display

```
function toggleDisplay(section) {
 1
          var el = document.getElementById("toggle"+section);
 2
          var status = document.getElementById("toggled"+section);
 3
          if (el.style.display == "none") {
 4
 5
                el.style.display = "block";
 6
                status.style.transform = "rotate(-90deg)"
 7
          }
 8
          else {
 9
                el.style.display = "none";
                status.style.transform = "rotate(0deg)"
10
11
          }
12
```

Appendix F: CSS for modifications

```
1
    .togglebutton:hover {
 2
          padding: 0.1em;
 3
          box-sizing: padding-box;
 4
          background-color: #ed9;
 5
          cursor: pointer;
 6
 7
   .togglebutton:active {
          box-sizing: padding-box;
 8
 9
          background-color: #dc7;
10
11
   .togglestatus {
12
          float: right;
13
          color: #08c;
14 }
15
   .star-box-review {
16
17
          font-weight: bold;
18
19
20 #titleAwardsRanks {
21
          font-size: 11.9px;
22
```

Appendix G: Raw Data

P#	Frequency	Lenses	Ease 1 (%)	Ease 2 (%)	Frust. 1 (%)	Frust. 2 (%)	Appeal (mm)	Appeal (%)	Time 1 (s)	Time 2 (s)
1	1 /yr	No	100.00%	65.52%	0.00%	71.72%	86	59.31%	20	78
2	1 /m	No	77.93%	77.24%	71.72%	13.79%	91	62.76%	32	14
3	Never	No	76.55%	55.17%	7.59%	11.03%	73	50.34%	10	21
4	1 /m	No	83.45%	95.17%	11.03%	10.34%	46	31.72%	13	3
5	1 /yr	No	95.17%	90.34%	2.76%	2.76%	116	80.00%	17	8
6	1 /m	No	71.72%	64.83%	37.24%	1.38%	70	48.28%	20	7